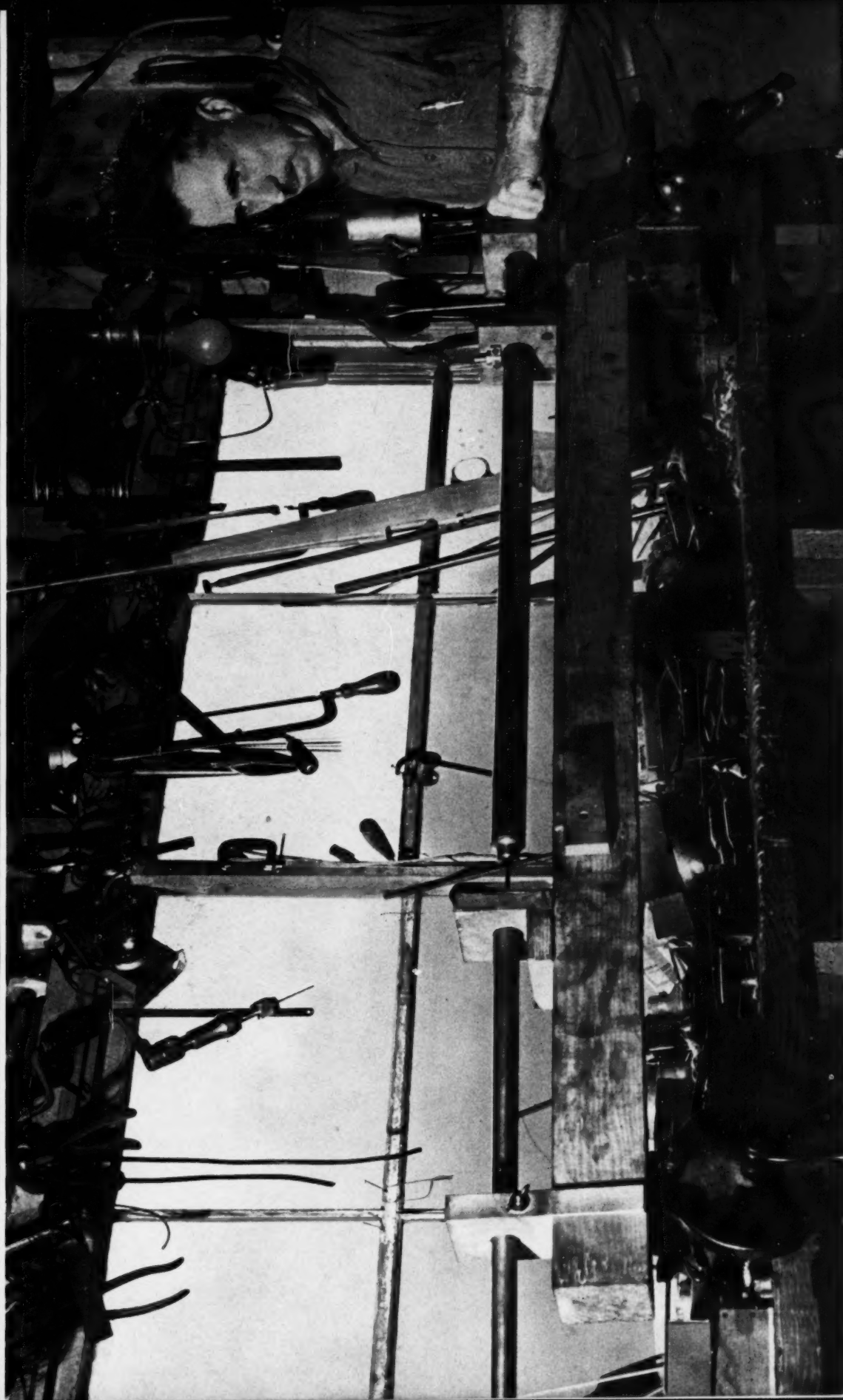


THE AMERICAN RIFLEMAN



1987

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THE AMERICAN RIFLEMAN

OFFICIAL JOURNAL OF THE NATIONAL RIFLE ASSOCIATION OF AMERICA

VOLUME 89

JANUARY 1941

NUMBER 1

CONTENTS

COVER PHOTO

Courtesy Riley Kellogg, Tucson, Arizona. Picture is of William Staege, gunsmith, of Omro, Wisconsin, rifling a barrel.

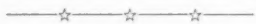
POWDER SMOKE	4
ACCURACY VERSUS VOLUME IN RIFLE FIRE.	5
BY CAPT. S. R. SHAW	
A CLUB'S JUSTIFICATION	11
BY HENRY M. STEBBINS	
ELEMENTS OF RELOADING	13
BY MAJ. EARL NARAMORE	
THE OLD COACH'S CORNER	16
HANDICAPPED BARRELS	17
BY H. J. BURKHARD	
SINGLE-SHOT RIFLES	21
BY J. V. K. WAGAR	
THIS HANDGUN GAME	25
BY WALTER F. ROPER	
COYOTE EXPERIENCES	26
BY MILTON F. McQUEARY	
A CHANCE TO WIN	30
OVER THE NEWS DESK	41
DOPE BAG	46
ARMS CHEST	52

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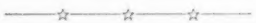
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A MATTER OF VIEWPOINT

NOT IN MANY YEARS has the New Year presented a more gloomy picture for America than in this year of 1941. With great sections of the world afire and the flames spreading, America will be hard put to avoid the holocaust during the coming year. Though we successfully keep out of actual war, our industrial development and the expansion of our payrolls is tied entirely to the unstable balloon of war economy which is liable to burst in our faces at any moment with the collapse of England and the triumph of the totalitarian powers. Our national unity is disintegrating under the termite activities of the unholy alliance of the Communists, Fascists, Nazi propagandists, and native-born "fellow travelers." A confused and inept leadership is pouring billions into a national defense program which is hopelessly bogged down. Taxes are going to be raised so high that even though more people are at work and most people are making more money, no one will be able to enjoy the increased prosperity because the politicians, via the tax collector, will get it all.



Not in many years has America enjoyed a New Year season with greater promise than that of 1941. For the first time in the recollection of many of the younger generation, factory windows are lighted at night, and the chimneys are smoking around the clock. Production schedules have attained the peak of 1929, and approximately as many people are gainfully employed as in that boom year. Increases in employment are to be confidently expected through most of the coming year. For the first time in our history we are launched on a national defense program which gives promise of being adequate to actually defend our unparalleled natural resources against any combination of foreign powers. The American people have at last become awakened to the dangers from without and the boring termites from within, so that our national unity is better than at any previous time since 1918. Our tremendously increased national income makes the increase in the national debt and the proposed increases in taxes a matter for no real concern. The American people will be able to buy more automobiles, radios, and electric refrigerators in 1941 than ever before in their history. Alone in the world, America stands prosperous, unified, and at peace with her neighbors.



The above represent two radically opposed New Year's forecasts, both of which have been and will be frequently heard, from cracker-barrel debates to nation-wide broadcasts.

It is all a matter of viewpoint. As is usually true in such a situation, the real facts lie about midway between the two extremes. As is also

usually true, the common sense of the average American citizen, if given an opportunity to function, will keep American policy and American home life on a temperate, sensible, middle-of-the-road course. The greatest danger that faces America in 1941 is that the average American will unconsciously allow his mind to be warped, or some of the windows of his mind to be closed by the poison-gas cloud of propaganda which is being emitted in a steady stream by foreign propaganda agents and by American politicians, business leaders, labor leaders, religious leaders, and educational leaders. No one group or class is entirely guilty, nor is any one group or class entirely exempt. Some know what they are doing, and are accepting pay for doing it. Most have merely become the innocent stooges for foreign agents who are clever enough to keep themselves in the background. There is only one tried and proven method of spotting this kind of propaganda, regardless of the source from which it emanates. That method is to use the ordinary common sense with which nature endowed all of us. When we hear a pessimist, seek next an optimist. Let one serve as a counter-irritant for the other, and our common sense will take us down the middle of the road.

As for the American rifleman and pistolier, there is little reason for gloom, and much reason for hope, in 1941. Though we have temporarily lost a portion of the privilege of government issue and sales which we have enjoyed for some twenty years, these privileges have already been partly restored, and will be fully restored when the immediate and greater problems of the arming of our uniformed services for the national defense have been taken care of. Out of the interest in national defense, our sport has gained vastly increased prestige, and the way has been opened to the well-managed club for a greatly increased membership.

The numbers participating in organized competition almost doubled in 1940 over 1939, and 1941 should find immeasurably increased activity. Alone among the shooters of the world, we may purchase commercial arms and ammunition of whatever type we desire, in whatever quantity we need. We still enjoy the blessing of shooting at paper targets which do not shoot back.

Truly the outlook for 1941 is a matter of viewpoint. From our viewpoint it is an outlook calling principally for an unusual amount of common sense; a great willingness to pull together for the good of the team, without regard to personal whims or opportunities to star; a deep, abiding conviction that our America, built on solid American ideals of hard work, thrift, and personal liberty (not license), is the best place to live in the world of 1941; and that those American ideals are worth fighting for, if anyone wants to pick a fight with us.

THE AMERICAN RIFLEMAN

VOL. 89

JANUARY 1941

No. 1

Accuracy Versus Volume in Rifle Fire

By CAPT. S. R. SHAW, U. S. M. C.

Reprinted from THE MARINE CORPS GAZETTE

WITH THE MODERN TREND toward increased efficiency in the weapons and services in all armies, it seems strange that there should arise any question of accuracy versus volume in rifle fire, and especially strange that the question should arise in this country, in view of the early history of American armed forces. But of late years the remark is often heard that it is a waste of time to attempt to teach men to shoot accurately.

In support of these remarks several arguments are brought out for depending on the volume of fire alone to make riflemen effective. These arguments can be boiled down to one of the following three statements:

- (1) Volume of fire is more effective on the battlefield than accuracy;
- (2) In wartime there will not be sufficient time to teach raw recruits accuracy with the rifle along with all the rest of the necessary details;
- (3) With the adoption of semi-automatic rifles, the volume of fire will be such a veritable hail of bullets sweeping over the enemy that accuracy, even if attainable, will be unnecessary.

Perhaps it would be best to examine each of these in turn, for if the first is correct, then there is no need of the other two. And if the second is true, then there is no need of the third. And if the third is true then the quality of our infantry will depend almost solely on the capacity of our ammunition factories, and, of a more doubtful nature, the capacity of the supply system under battle conditions.

In examining the first statement that volume is more effective on the battlefield than accuracy, we will first examine it from the theoretical standpoint, and then practically as tested by actual events in past history.

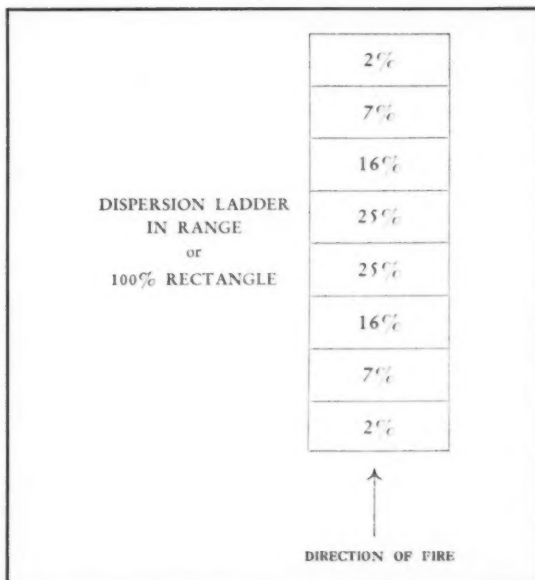
In examining the theoretical value of fire we enter into the domain of mathematical probabilities. This science has shown that for any weapon or group of weapons, firing at a given target, the fall of shots will be grouped in a rectangle known as the 100% rectangle or dispersion ladder (See Figure 1). This rectangle is much greater in range than in deflection. In range it can be divided into eight strips, or width equal to $\frac{1}{8}$ of the total length of rectangle, and normal to the line of fire. The width of this strip is known as the "probable error." The two strips on each side of the center line will each contain 25% of the shots, the next two on either side, 16%; the next two 7%; and the last two, the one farthest away

from the weapon and the one nearest, will each contain 2%. This same pattern of the fall of shots holds good both for shots falling on the horizontal plane of the ground and for the shots in a vertical target intercepting the paths of the shots.

Now let us assume an impossibility, namely that we have a group of riflemen, rifles and ammunition that are perfect. And for a target let us assume an enemy platoon on a gentle hillside, and that our riflemen have located the target well enough to know that all of the enemy riflemen (let us say 30) are within an area 200 yards long by 25 deep, and further, that none of the enemy is dug in and each is 6 feet tall and 18 inches wide, so that he occupies one square yard on the ground. This gives us an area of 5,000 square yards, scattered about in which are little plots of one square yard, each occupied by an enemy.

If we assume another impossibility, that the 100% rectangle of our shooters will exactly cover the area, none of the shots ever missing, what will result if we fire 1,000 rounds at the area? It will mean that there is one chance in five that any particular square yard will be hit. And

Figure 1



for our 30 men in the area, the chances are 150 to one against any particular man being hit.

If, with this perfect shooting, no shot ever falling outside of the area, we fire 3,000 shots into the area, the chances are 50 to one against any particular enemy getting hit.

Getting down into the realm of possibility, let us assume that we have a group of expert marksmen who never miss a 20 inch bulls-eye at 400 yards, and assume that the range to our 30 men in the 5,000 square yard target area is 400 yards. (See figure 2). If this group of experts have them all in the black, some just in at six o'clock and some just in at twelve o'clock, they have a pattern on the horizontal ground of approximately 175 yards. But our target is only 25 yards deep. How many of our shots will go into the area?

Now we must go to our tables of probability. We will assume that the target area is on a rather steep slope so that the actual length of the shot pattern is foreshortened 25 yards, leaving us a pattern of 150 yards. The width of the probable error, or one-eighth of 150 yards, is 19 yards. Then by the method of calculating probabilities, we divide the target depth, 25 yards, by twice the probable error, or 38 yards. The result, or 0.65, is the probability factor with which we enter the table of probabilities and we find that we can expect only 34% of the shots to hit in the required area. In other words, for each 1,000 shots fired we can expect 340 shots to hit in the area.

This means that for 1,000 shots, the chances against any particular one of the 30 enemy in the area being hit are 450 to one. If 5,000 shots are fired into the area, the chances against any particular one of the enemy being hit becomes 90 to one.

The prospects of our expert riflemen do not appear to be very bright. However, they will not be merely trying to spray an area. They will be trying to hit certain individual spots they have selected as the hiding place, or probable hiding place, of an enemy rifleman. Now their chances become much brighter. For, going back to the range ladder, we can expect 50% of the shots to fall within a space 19 yards short of the point of aim, and 19 yards over the point of aim. For each ten shots, 5 will fall within 38 yards of him. And that means that the chances against the enemy being hit are less than 10 to one.

Using the same reasoning, if our shooters should all be marksmen, and being generous to them, we will assume that firing at a twenty-inch bullseye they never get anything worse than twelve o'clock and six o'clock fours.

This gives them a pattern on the ground of approximately 300 yards. Taking off 25 yards for the foreshortening effect of hill slope we get a pattern over the target of 275 yards, yielding a probable error (one eighth of the dispersion) of 34 yards. Making the same calculations, we find that we can expect 20% of the shots to hit in our target area. This means that when we just shoot at the area the chances are 750 to one against hitting any of the enemy riflemen.

But here again we really have a much better chance of hitting, as we are not shooting at an area, but our men are shooting at spots where they think the enemy is, due to seeing him, or the flash and smoke of the enemy rifle, or movement, or just because it looks like a good place for an enemy to take cover to shoot from. This means that 50% of the shots will fall within two probable errors of the point of aim, or within 68 yards, bringing the chances of the enemy being hit down to less than 20 to one.

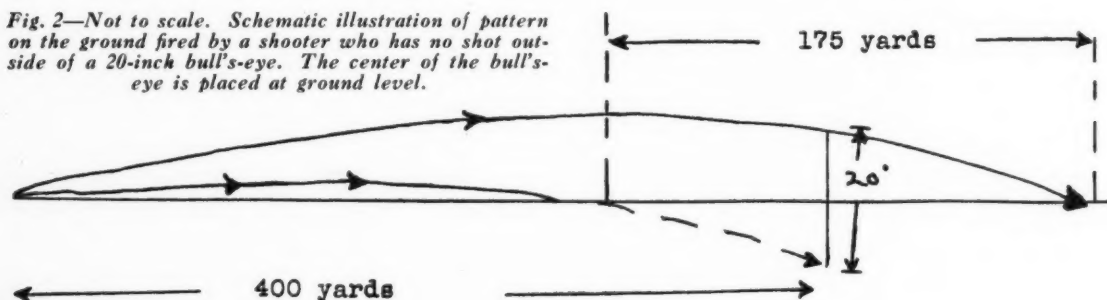
Note that these percentages of hits expected are for men who have been trained. For even the marksmen have received the same amount of training and teaching in shooting as the experts, the only difference between them being that the expert has absorbed the training better.

In consideration of the above it can be seen how little effect can be hoped for from men that have received little or no training beyond how to load and which way to point the rifle. For the shot pattern of untrained men will make the 300-yard pattern of the marksmen seem small. Firing at any range it would be generous to estimate their pattern as small as 500 yards. And with a pattern such as this it would take a tremendous number of rounds to secure an effective volume of fire in any particular target area.

It will be noted that in the above discussion the matter of dispersion in deflection has not been considered. This is because at ranges under 600 yards it can safely be assumed that no man who can shoot as well as the marksmen used above (who could hardly be called good marksmen) would be off as much as a point in his wind estimation. But this assumption does not hold with untrained or only partially trained men, for even with perfect wind estimation their errors caused by faults in aiming, holding and trigger squeeze will be such as to cause a deflection pattern almost as large as their range pattern.

So it would seem from the theoretical standpoint, mere volume of fire is not enough; that this volume must be reasonably accurate if our riflemen are to be effective.

Fig. 2—Not to scale. Schematic illustration of pattern on the ground fired by a shooter who has no shot outside of a 20-inch bull's-eye. The center of the bull's-eye is placed at ground level.



However, those who propose to substitute volume for accuracy raise the reasonable objection that the above calculations depend upon the shooters knowing the exact range to set on their sights. They say that in battlefield conditions the range will be estimated and that errors in this estimation will be such as to cause the shot pattern to completely miss the target and even the target area.

This condition is not quite true in dealing with a modern battlefield. For it only holds true for ranges over 500 yards. As Generals von Rohne and von Ploennes of the German army, General Parravicino of the Italian army, and Lieut. Colonel Eames of the United States army determined, both by theoretical and mathematical calculations and by experiment, at ranges under 500 yards the errors in aiming have a greater effect than the errors in range estimation. The calculations were made for, and the experiments made with, the Springfield rifle and 1906 ammunition in the United States, and with rifles of very nearly the same characteristics in Europe. Using the higher velocity, flatter trajectory M-1 ammunition it is more than likely that the range at which precision in aiming begins to have a greater effect than errors in range estimation has been increased to 600 yards.

From theoretical calculations we can only draw the conclusion that we can expect far better results from accurate rifle fire than from a large volume of fire from poorly or partially trained troops.

How does this compare with the results obtained in the actual history of warfare?

To obtain this comparison it should be possible to go as far back as recorded history to study the effect of missiles projected at the enemy. However, we will go back no further than the Hundred Years War between England and France.

In this intermittent struggle, lasting the major part of a century, the English forces won the major part of the battles and the English longbowman was the chief factor in winning the victories. The results these longbowmen obtained were not caused by mere chance. For the English law required every man between the ages of sixteen and sixty to practice with the longbow. The requirements of the law were enforced; but their enforcement required little effort, for in a manner quite similar to our own rifle matches, longbow contests were held in every shire and district, the winners progressing to matches where winners of smaller matches were pitted against each other. All winners received substantial prizes. In addition to the material prizes, there were the more intangible ones of the fame of the winner, and the honors and attention given by the nobles and gentry to those who excelled.

Jumping over the several centuries during which firearms were being developed, and during which, for numerous reasons, accuracy on the part of foot troops using shoulder weapons had little attention, we come to the French and Indian Wars. Here the modern use of infantry was faintly foreshadowed. Not the only instance is the oft-repeated tale of the defeat of Braddock's regulars by a force of French and Indians. Here the use of well-aimed fire from dispersed groups of riflemen, taking every advantage of cover, showed its effectiveness. But the British, characteristically perhaps, declared that there

were no new lessons to be learned from these defeats, and that they were entirely due to the "peculiar circumstances" of colonial warfare.

Again during the American Revolution the British found that the "uncouth" American farmers and backwoodsmen were often more than a match for their regular fighting in close order and using volley fire at close range. With their superior marksmanship, and confidence in that marksmanship, the Americans often opened effective fire before the British considered they were within range. In fact, in self defense, the British imported several Jagers (sharpshooter) battalions recruited from among the hunters of the German forests. Some of the well known instances are the battles of Concord and Lexington, Bunker Hill, Saratoga and Kings Mountain. But in many of the smaller actions the superior accuracy in shooting of the Americans was often a telling factor.

This time the British learned their lesson, for under the influence of Sir John Moore they formed several rifle regiments, later, in 1800, to be formed into the King's Rifle Brigade. These troops, especially trained in the use of the rifle, were to be the backbone of the British forces in the Peninsular War, and Napoleon's veterans were to fear them as the "only troops in Europe who had sights on their rifles and took aim when firing."

American forces once again proved the value of accurate shooting in the war of 1812. In Steel's "American Campaigns" is the statement that "wherever our troops attained victory the success was due not to good tactics but to courage and good marksmanship." The accent on marksmanship was especially notable in the Battle of New Orleans. In this action the Americans, for the most part Tennessee and Kentucky backwoodsmen armed with their "squirrel-guns" and trained to shoot so as to "put meat in the pot with one shot," lost 71 killed and wounded. Pakenham's regular British troops, veterans of Napoleonic Wars, lost over 2,000, mostly killed, with a large percentage of officers killed. Many of these British officers had only one wound, a rifle ball in the head.

Following this war, there being no marked development in the rifle, European armies made no advance in the training of their foot-troops in their weapons. They tended to follow closely the Frederician line of thought, where the density of fire placed on the enemy was not increased by decreasing the pattern size, but by increasing the number of men per yard of the firing line. However, in the Mexican War once again the Americans, using militia troops composed largely of backwoodsmen, demonstrated the value of having a large number of hits per round per minute.

The greatest war of modern times, prior to World War I, was the American Civil War. Here, most military commentators are agreed, one of the initial advantages of the Confederacy was the fact that the majority of her troops were accustomed to the use of fire arms and were well practiced in them, due to the Southerners' fondness of hunting and sports of the field in the well-to-do classes, and the necessity of the poorer classes to get wild game to help feed their families. In contrast, many of the Northern troops were city-bred, ill-acquainted with weapons, and many units were newly arrived European

immigrants who had never been allowed to possess firearms in their original homes.

The next major war, or rather series of wars, was Bismarck's three wars against the Danes, the Austrians and the French. The Prussians overwhelmed their poorly trained and badly equipped opponents.

In the Franco-Prussian war one of the prime reasons for the French confidence was the possession of a rifle superior to that with which the Germans were equipped. The French rifle was the "chassepot," the German, the older "needle-gun." The chassepot was superior to the needle-gun in both range and accuracy and was capable of being fired at eleven rounds a minute compared with the needle-gun's five rounds a minute.

The possession of a superior rifle was not enough to overcome the French lack of training in its use. The French held little or no training in marksmanship. The Germans held a large amount of both marksmanship and musketry training at ranges up to 900 yards. (This range was not excessive in view of the still prevalent custom of maneuvering troops in masses on the battlefield). The value of this training was shown early in the war, especially at the battles of Metz and Worth. In these two engagements the Germans received little support from their artillery. Disregarding the rather ineffective but voluminous French fire, the German foot-troops pushed in, with their inferior weapons gained fire superiority over the French with their superior weapons, and soundly drubbed the Frenchmen. And not the least factor in the French defeats was the fact that their troops, poorly trained in handling their weapons, often fired so fast with no results, that they were out of ammunition before the battle was well-commenced.

Following the Franco-Prussian war there was a development of firearms that was to completely change the character of actions on the battlefield. In the course of a few years the rifle was to reach a stage of development that was little short of its present designs. And the development of the machine gun was to increase tremendously the power of the defense.

The development of the rifle was demonstrated by the action of the Boer wars. These modern rifles, coupled with the accurate shooting of the Boers, were a major factor in the campaigns. The Boers had little artillery and less ammunition for it, seldom had as many as 30,000 men in the field, and these in small scattered units. But the men they had were accustomed from childhood to handle firearms and were almost to a man experts in the use of the rifle in the field. Their ability with the rifle was to be so effective that the whole weight of the British Empire had to be employed in order to crush this handful of men, whose chief military characteristic was their accurate shooting and supreme confidence in their use of the rifle.

In the battle of Majuba Hill in January 1881, 350 British Infantry under the command of General Colley had occupied a defensive position on the hill. Two hundred dismounted Boers commenced an attack early in the morning. Here, if never before, was the value of accurate marksmanship demonstrated. Neither side had artillery and the issue was decided solely by the fire of the riflemen. Ninety of the Boers took covering positions in

small groups at ranges up to 900 yards from the British, 60 advanced on the British position from the north and 50 from the east. In a short while the battle was over with the Boers in possession of the hill, and most of the British too. The British lost 118 killed, 128 wounded, and 58 captured, a total loss of 304, the remainder managing to escape. The Boer loss was 1 killed and 5 wounded.

The British with a strength of almost twice their opponents, in a commanding defensive position, had been almost annihilated, suffering a loss of 50 men for every casualty on the Boer side. The British reliance on volume of fire, with little training in marksmanship, had caused them to suffer a disastrous defeat when opposed by men whose measure of fighting was NOT rounds per minute, but HITS per round per minute.

This is especially made clear in the "German official account of the War in South Africa," where the effect of the Boer fire is described thus, "Every attempt of an English rifleman to raise himself or leave his cover was stopped by the well-aimed hostile fire." While the large number of English dead is yet another proof of the English soldier's courage and stamina, when compared with the Boer losses it is even more convincing proof that in war as in any other trade or profession, the workmen must have a thorough knowledge and mastery of the tools of their trade.

Incidentally, it is interesting to note that one of the surviving Englishmen in this battle was a young subaltern by the name of Ian Hamilton. We will come across his name later in this article.

The lesson as to the value of accurate shooting, as in the case of the French and Indian wars, was to be largely disregarded by the British until taught the second lesson in the second Boer War.

When the British went into this war, as the German official account describes it, they still relied on volleys by platoon, "for fear that the fire would get out of hand." For rifles they were armed with the Lee-Metford, which compared quite well with the Boer Mauser. However, the British had so little knowledge of the rifles that Col. Mayne in his book, "The Infantry Weapon," says that "The Boer War had actually begun before the British discovered that their rifles shot 5 inches to the right for every 100 yards of range."

From the very first action and throughout the course of the war, the superiority of the Boer's rifle shooting was a decisive factor, continually affecting the British actions and dispositions, time after time causing the British to be defeated, and forcing them to eventually go to the expense of large operations of a major war. There is hardly a page of the "German Official Account of the War in South Africa" that does not mention the effectiveness of the accurate Boer rifle fire. And the same can be said of almost any other account of the war. In some of the firsthand accounts by British participants in the campaign, the British writers seem to imply that it was not quite cricket for the Boers to hide behind cover and calmly shoot down the British troops, who could not make any effective reply with their own rifles. And they grew quite disgusted with the Boer practice of withdrawing before an imminent bayonet charge (whenever

the British, by tremendous superiority in artillery support managed to get within assaulting distance) to take up another position, thus forcing the "glorious" (but poorly-trained) British infantry to go through again the agonizing process of advancing through well-aimed rifle fire to which their own reply was ineffective.

To attempt to enumerate or describe all of these actions would take a large book. To mention a few may suffice to give a general picture. Time after time small bodies of Boers, sometimes as few as eighteen, would hold several British battalions at bay for hours, until the British withdrew, or were relieved by the fire of artillery. At San River 3,000 Boers held 30,000 British off for four hours, at a range of 400 yards or over. At Nicholson Nek, in a defensive position, 1,100 British were killed or captured by less than 900 Boers. Col. Balck, the German tactician, in the first volume of his book on tactics, describes the action of Modder River as follows: "The British were paralyzed for 10 hours by fire commencing at 1,000 meters. Any attempt to return the fire or to crawl attracted such deadly fire, that all attempts were abandoned."

A typical action was that of Magersfontein. The Boers, in a defensive position, numbered between 5,000 and 6,000 with 10 guns, only five of which were field guns, the others being noisy but ineffective "pom-poms." The British had an effective strength of 10,200 rifles, 900 sabers and 33 guns, five of which were the more powerful naval guns. The British attacked at dawn. At the end of 12 hours of fighting the British withdrew under cover of darkness with the loss of over 13% in casualties compared to the Boer loss of 250 casualties. The British losses were almost entirely due to rifle fire, as the Boer guns took little part in the fight, due to lack of ammunition and to being neutralized by the fire of British guns when they did open up. On the other hand, the Boer losses were almost entirely due to shell-fire, the British guns, organized into six batteries firing around 1,000 rounds per battery. During this fight many of the British infantry quickly exhausted the 150 rounds of ammunition each man carried, and then, pinned down by the Boer rifle fire, were forced to lie there in the hot sun, without ammunition and suffering from thirst, waiting for the relief of darkness. Practically the same story, of troops pinned down for hours by accurate rifle fire at ranges up to 800 yards, is the account of the battles of Colonso, Paardeberge, Nitrals Nek and many other actions.

It is interesting to note, but difficult to follow the reasoning of the German analysis of several of these battles, particularly Magersfontein, "the pessimistic views which were expressed after the Boer War, with respect to the difficulty of attacking troops armed with modern firearms have been very considerably exaggerated."

The view expressed by Col. Mayne in his book "The Infantry Weapon" would seem to be close to reality. He said "modern rifles in the hands of trained and undemoralized men mean that 800 yards is the nearest in open country that troops can come without help from artillery, night, fog, or God." The remarks made about night, fog or God seem to foreshadow remarks made by Liddell Hart 30 years later.

Although this war was closely analyzed by almost all other armies, they largely disregarded the lessons to be learned. The French disregarded the war entirely, and going off the deep end, became hypnotized with their doctrine of the offensive. The Germans and the United States decided that the war was fought under peculiar conditions, and that their idea of having one rifleman per yard of front was still correct tactics.

But to some extent the British got the idea on the second lesson. In fact, some of them got the idea on the first lesson. For Ian Hamilton, the young survivor of the Battle of Majuba Hill, went to India, where under Lord Roberts he introduced new marksmanship and musketry regulations for the Indian Army, using silhouette, moving and disappearing targets for the first time. These innovations met with intense disapproval at the War Office in London, but were eventually approved just before the second Boer War. As in other cases, the decision was a little too late to be effective in the war then in progress.

However, after the second Boer War, the British went in strongly for marksmanship, largely under the influence of Lord Roberts, who in one of his many speeches urging an intensified teaching of accurate marksmanship said "The two points that the war in South Africa brought forcibly to my mind are, first, the necessity for making our soldiers good shots, and secondly, for developing their individual intelligence." This influence was to be strong enough that by the time of World War I the small British Regular Army was as good as, or better than, any other army in the world in the quality of their rifle shooting.

In the wars occurring between the Boer War of 1900 and World War I there is little to show, in one way or another, the value of accurate rifle shooting. This was largely because the opposing forces made little use of marksmanship training. In the Russo-Japanese War there were some isolated actions in which the Russian troops involved showed themselves to have received considerable marksmanship training. However, the training of the majority of the Russian troops may be deduced from Suvarow's maxim, "The bullet is a fool, only the bayonet is wise." In the Spanish-American War only the regular troops had had any real training with the rifle, but its effectiveness was demonstrated both in Cuba and the Philippines.

Then came World War I. In this war, true to their doctrine of "l'offensive a l'outrance," the French went in more for shock tactics with bayonet charges than for training the troops in shooting their rifles.

Little more was done than to have a small amount of gallery training at a range of 40 yards, and even this depended upon the initiative of the individual garrison commander.

The Germans entered the war with more training in marksmanship than the French, but they were more concerned with the accurate control of the fire than with producing accurate fire to be controlled. Which seems to be putting the cart before the horse. For there is little use in building an accurate control for a machine if the parts of the machine itself are inaccurate.

The small British Regular Army entered the war with the best trained troops of any so far as their rifle shooting was concerned.

And it was lucky for both the French and British that this was so. For in the early battles, especially the fights at Mons and near Le Cateau, it was only their marksmanship that saved them from being completely overrun, and the training of the foot soldier was to partly redeem the mistakes of the commanders.

Near Vimy, in the Mons battle, the Germans first attacked in close formation. The accurate British rifle-fire swept away the first few waves. Then the Germans formed into small groups and again advanced. These too were swept away by the rifle fire. Finally the Germans put down a heavy artillery bombardment on every foot of the British line, and managed to advance after terrific loss. The Germans were so impressed with this rifle fire that they could not bring themselves to believe that it was really rifle fire. Instead they reported, and for a long time believed, that the British line was just one machine gun after another.

However, the remnants of this regular army were scattered through the "New Army" or promoted to ranks where they no longer fired rifles. And the "New Army" was so hastily trained, and the instructors were so hypnotized by the unfamiliar conditions of trench warfare that little or no attention was paid to teaching them more about their rifles than how to load them and to point them away from their friends. Instead they were given intensive training in close order drill, trench digging and bayonet practice.

Until all armies organized sniper corps and put many more machine guns in the lines, it was possible for men to get up out of the trenches, and move about standing up in the open, when within 300 yards of the opposing trenches, and not have a single shot fired at them. Their opponents thought they could not hit a standing man.

It was not long before the opposing sides found that it was necessary to develop their rifle shooting again. The British were more successful at it than any of the others. A German World War Lieutenant writing in the *Militär-Wochenblatt* describes how effective the British snipers were, saying that even loop-holes in sand-bag parapets became death-traps. He further said that the Germans were handicapped because they had no confidence in either their marksmanship or in their rifles.

Finally in 1916 the Germans began to see that in order for the infantry to cover their own advance after their own artillery and mortar barrages had lifted, the principle of individual marksmanship was required. Reliance on the old idea of pure musketry or the accurate control of a volume of fire was not enough to get results against hidden scattered machine gun nests protected by riflemen. So new tactical manuals were issued, changing the regulations which required a man to fire straight to his front regardless of whether he saw a target or not. The new manuals encouraged the men to look for targets, especially on the flanks, and to concentrate their fire on where they knew there was an enemy rather than to continue to spray the countryside with lead.

But it was not until the arrival of the Americans that, for the first time since Mons and Ypres, units were to

be in the field that had been well trained in marksmanship. These units were the Brigade of Marines and most of the regular Army units. The training of the National Army units, as will be shown later, was deficient.

The Second Division, on its entry into battle in June 1918, was to cause the Germans to report that the most demoralizing factor they encountered in the whole war was the aimed rifle fire of these American troops. The German units opposed to the Marine Brigade recorded in their war records that the American units opposed to them held their front lines with snipers and special sharpshooters. As a matter of fact they were just plain ordinary Marines who had been well-trained with the rifle.

In this defense near Chateau-Thierry, the Second Division helped to halt the German drive on Paris, and their efforts were almost entirely without the usual heavy artillery support and in large part without sufficient machine gun support. When the Second Division took part in the savage counterattack that broke the German attack it was almost totally lacking in artillery support, and its success was due to the confident, driving power of the Americans, and their skillful use of the rifle in stalking and outflanking machine guns.

When the Second Division took part in the offensives of July 1918 and September 1918, the German units opposed to them were to record again and again their fear of the accurate American rifleman, who not only believed he could hit the enemy at ranges up to 600 yards, but made it an habitual practice to do so. General Pershing after reading the reports on these actions was to increase his demands that the units of the National Army and the replacements for the regular Army regiments be given thorough rifle training before coming to Europe.

The success of these units in using their rifles was caused by having had thorough training in marksmanship. The Regular Army units of the Second Division were unfortunate in that their replacements were not as thoroughly trained. However, the Marines maintained a uniformly high standard of ability with the rifle due to the fact that all replacements received not less than three weeks' intensive training with the rifle, and usually up to six weeks' intensive training, which would seem to be plain common sense. Since the rifle is the main weapon of the foot-troops they should be well trained in the tool of their trade.

The lack of training with the rifle in the Army units sent over-seas was to be a serious difficulty for Pershing and he sent numerous cables, urging, imploring, demanding that all units complete a thorough training with the rifle at ranges up to 600 yards. For a number of reasons, lack of good instructors, lack of ranges, influence of French and British instructors, whose main interest was in trench digging, and apathy of people in charge of the training, little attention was paid at home to Pershing's demands. Even at the end of the war he was still complaining about troops being sent over who had never fired a rifle, even after four months' training. And General Harbord could remark that "men arrived in France who had never fired a rifle but who were good at close-order drill and had been led in mass singing."

Thus, except for isolated units such as the Marine Brigade, the American troops (*Continued on page 34*)



The second week's meeting

A CLUB'S JUSTIFICATION

By HENRY M. STEBBINS

Secretary, Lynchburg (Va.) Rifle and Pistol Club

THE FRENCH HAVE A PHRASE for it: *raison d'être*, reason or justification for existing. Until this fall our club had no such justification—beyond that of affording amusement and good fellowship to its members. Then we took the suggestion of the N. R. A. and organized a class in rifle shooting for non-members.

Our club is humble, financially and in numerical strength. It was organized in March, 1939, with nine charter members, four of whom have dropped by the wayside, two of them unavoidably, because of change of residence. New members joined, and in June of 1939 we affiliated as an N. R. A. club. After the inevitable loss and gain we now have 20 members, 14 of them reasonably active and regular in attendance.

I suppose that any club officer is apt to consider the difficulties in keeping his club alive as being pretty formidable, perhaps even unique. I share those illusions! Our chief difficulties, no doubt unheard of before, are lack of interest and lack of money. This section of Virginia is emphatically not a rifle-shooting community; it is a shotgun community—and I am not referring to hymeneal affairs! We have fairly good quail shooting, even after a hard winter, though some of our hunters travel long distances over mountain roads to find more birds. There are ruffed grouse in the hills, now and then woodcock pay us a visit, and turkeys and ducks are fairly abundant, and increasing. There are very few

woodchucks, but rabbits and squirrels are rather plentiful, and deer can be found, by a lucky hunter, at no great distance. All this game can be taken with a shotgun, and most of it is, with the possible exception of the chucks, a few of the squirrels, and a very few of the rabbits. Buckshot are usually tossed at the deer, but a few of our more progressive stores in Lynchburg are beginning to carry the rifled slug loads, a very encouraging sign. The point of this résumé of conditions is that in this territory the rifle is by no means an indispensable arm. To be imbued with the ambition of mastering the rifle, a local shooter must either be a natural born rifle crank or have an interest in military affairs. He does not need to buy a rifle and learn to use it, in order to hunt successfully.

Lack of money has held us back, too. None of our members is particularly well-to-do. When we buy a rifle we want one that we can use for plinking, for squirrel and possibly rabbit hunting, and for varmint shooting, as well as for target work. We don't feel like investing in a heavy-barrelled 52 or a Model 37, a twelve-pound rifle that would never get far from camp. Likewise, high-power target telescopes come high, and in this rugged, wooded country there is practically no opportunity to use one except on the target range. For that matter why should the average man here even consider joining a rifle club? Most Southern cities of our

size offer easy access to "waste land," where a man can take his .22 and pop away to his heart's delight, without danger of doing damage or of being interrupted. For two dollars, our annual membership fee—four bits to such boys under 18 as we see fit to admit—he can buy several boxes of cartridges, and trolley fare, too, to the edge of the city, if he wants an extra indulgence.

But there have been definite and mighty aids in our struggle to keep the club alive. One of these helps is common to any club that survives, the work of a few senior members—and, in our case, of two or three junior members, also—who have given generously of their time, effort, and contagious enthusiasm to keep the thing going. The other great aid is perhaps unusual. A sporting goods firm, over a century old and the best known in this part of the state—S. O. Fisher, Inc.—has given us, concretely, these things: .22 long rifle ammunition at cost, adequate space in its clean and sufficiently heated basement, and light current. Less materially, but as effectively, it has given us the good word and has encouraged, I feel sure, diffident prospective members. And for the life of me I cannot see how this firm has made any material gain by helping us. I think you could count on your fingers the number of firearms our members have bought from the store since our club was organized. Our good will and the tendency to buy other than shooting merchandise there, you ask? Possibly, but if so, men who encourage the rifle game certainly deserve rifle-men's support.

Compared to others, we have been a puny club. When we planned to organize a public rifle-shooting school, we fondly hoped to get as many as a dozen men to enroll. We waited until three of our members who made the pilgrimage had returned from Perry, we ran two or three newspaper articles, we interviewed a few likely prospects. Names began to fill the enrollment sheet, and when we at last got under way, on October 9, 49 "students" attended the first meeting. Six of the ten meetings planned have now been held, and we still average well over 30 students per week. Of course we had expected a few to drop out, and we are anything but discouraged.

We planned a ten-hour course and had a rather elaborate program, which has been somewhat simplified. Wednesday from eight to ten was our club night; now our members are satisfied with only the eight to nine hour for their own shooting. School, following that, runs slightly over an hour. Of course we can't handle from thirty to forty students in that time, and on Tuesday night, with the prompt permission and co-operation of the store managers, two or three of the club members come in to instruct an additional section. At least one of these is a junior member, and not a relative of any senior member, either. "Club secretaries please note." Juniors *can* pay their way, if, as with us, the organization, nutrition, and frequent resuscitation of a separate junior club seems to be out of the question.

Swamped at our first meeting, we did no shooting at all, slightly to the disappointment of students and instructors alike. We used the time in a lecture on safety rules, repeated in later lessons, in explanation of a chart of the sight picture, and in instruction in the use of the sling. One of our members, who has shot on the 1940 Virginia

civilian team, demonstrated the prone position; then he and other members helped the students, very intent, to crawl into the sling and assume the prone, aiming an empty rifle at a 50-foot target. It was serious business for everyone. We do our best to simulate military rifle training, and we try to keep the work from degenerating into a sport, fascinating though the sport of small bore shooting certainly is. But everyone has a good time, and everyone learns.

In the five following lessons we gave much practice in prone firing, later a few five-shot strings of rapid, and, last week, practice in sitting. To help fill in the time of those waiting their turn we usually post a bulletin of rifle vocabulary, shooting gossip, charts of sight manipulation and adjustment, and so on, and frequently let them train each other in rapid clip-loading of the '03 Springfield. Those diversions partly overcome the tremendous temptation to hover behind the ready line and watch things tick, which in itself isn't a very bad tendency.

Last Saturday, November 16, twelve students and three members tore themselves from the attraction of a big football game, faced bitter weather, and journeyed several miles to the municipal range, built for National Guardsmen and police, where we had a supplementary lesson with the .22's at 200 yards, using the .30 caliber A and D targets. I wondered if it seemed foolish to our protégés to use these rifles at this range. Fortunately the first man to fire was a pretty good student, though he had never had any military rifle training except in our modest little school. Ping! and the paddle showed a 6 o'clock 4, close to the black. Then came four 5's, and I thought I heard a murmur of surprise. We shivered and froze, but we stayed until dusk.

We have four evening lessons yet to go, and a supplementary outdoor lesson at 200 yards with the .30 Springfields, announced at the first lesson and received with great delight. Our whole course points up to this, and we do our best to explain that a properly held rifle doesn't kick badly, and that cotton in the ears isn't sissified, but a help to better scores. We'll go on, indoors, with practice in the sitting and prone, take up offhand, and probably omit kneeling. (Let weaker nations bend the knee!) Already most of our people understand minutes of angle and can adjust the Lyman 48 type of sight. The rest we hope to make proficient with this sight, so similar to that on the Garand, and not very different in principle from that on the '03 Springfield. Although we keep to the essentials, aiming, breathing, trigger press, the sling, the positions, and very important, sight adjustment, it has been our intention, though by no means our complete achievement, to teach so thoroughly the theory that our students, whatever their individual achievement in practice, can act as instructors if the need ever comes.

Who are our students? Mostly men of military age, clerks, mechanics, business men, a few professional men—Americans you'd be proud of. There are also two ladies, as serious as any of the men, and a sprinkling of older men. It would do your heart good to see them all, and watch their intentness. And their scores aren't bad; many of them are up to or above club standard. One of the older men, who has a son in training in the Naval Reserve, told me: "I think there's (Continued on page 39)

ELEMENTS OF RELOADING

FOR THE HANDGUN SHOOTER

PART III. RELOADING TOOLS

By MAJ. EARL NARAMORE

NOW THAT THE BASIC ELEMENTS of reloading a cartridge have been discussed, we can give some attention to the tools used for doing the job. To cover in detail all of the tools on the market would require much more space than could be given here, so only a few of the less expensive and widely used tools will be considered in detail. But we can spill a few beans on the broader aspect of tools, that may be of some help to the reader in interpreting the catalogue information and manufacturers' propaganda, which often leaves the prospective purchaser still wondering which tool will suit his needs the best.

In the first place, all reloading tools are fundamentally alike. They all boil down to a series of chambers or dies with some mechanical means of pushing the cartridges into and out of them, or the process may be reversed and the dies pushed onto and pulled off the cartridges. The net result is the same in either case. Regardless of external form, the dies for any given cartridge must be essentially the same, for otherwise they wouldn't perform their function; so the main differences in reloading tools of different makes are in the mechanical means employed to give the required motions.

Any tool must be a compromise, as it must perform several operations that are not mechanically related. For example, one tool may employ a system of leverage capable of completely resizing heavy cartridge cases, and yet by its design, may have to use that same leverage to do the more or less delicate job of seating primers. This is all right provided the user is careful in the application of the force at hand. An advantage in one direction may mean a disadvantage in another, and no tool or machine can be pumped with the vigor of filling the old oaken bucket on a frosty morning, but must be operated with a thought for the particular result that is to be accomplished in each operation.

Aside from the basic principle employed in a tool, the rest is mostly trimmings, and alas, these are often only talking points to beguile the innocent who thinks more about how fast he can reload ammunition than how well he can do it.

But to get down to business, we can begin with the Ideal tool, as this is the most widely used and the oldest reloading tool still in common use. This tool takes the form of a pair of pliers or a nutcracker—a cognomen frequently attached to it, and these pincers are the mechanical means for pushing and pulling the cartridge. The chambers or dies screw into a threaded boss on one of the handles, and must be changed or adjusted for each operation. The tool comes in two models, that differ only in a minor point. The No. 3 tool is for rim cartridges, and the travel of the cartridges is limited by their rims coming into contact

with the surface of the tool. The No. 10 tool differs only in having a slide (a hook in the older models) to engage the extractor groove in rimless cases, to support them against the pressure of priming.

The handles have two loading holes, one of which is used only for priming, while the other, located over the threaded boss, serves to guide the cases into the chambers. A small hook in the upper handle extracts the case a short distance, so that it can be dumped out or removed with the fingers; and because of the short travel of this hook, chambers for straight cases need to have an enlarged clearance to free the cartridges. Were the travel as long as the cartridge, this clearance would be unnecessary.

The tool as listed and as it comes (for five bucks and fifty centavos) consists of a pair of handles, a double adjustable chamber, and a cap extractor. All other parts are sold separately as extra accessories. For revolver cartridges that must be crimped, the basic tool is adequate, as it can be tipped to prevent the bullet from receding too deeply into the expanded case when seating it, and the crimp will then hold it in place.

The double adjustable chamber can be screwed into or out of the handles to give any desired degree of crimp (or none at all), and the seating screw may be adjusted independently to seat the bullet to any desired depth. As the loading hole in the handles guides the upper part of the cartridge, and the business part of the chamber guides the lower part, the cartridges move quite straight even though the force as applied by the handle is in an arc. The old Bond Model C tool was made on the same general principle as the Ideal, but differed in that the chambers had no guiding portion. The upper part of the cartridge was guided, but the lower part went wherever it dawgone pleased, and a good deal of care was necessary in order to get anything approaching a uniform crimp. This lack of a good guide at the mouth of the case caused the principal difference in the operation of these two tools.

With the Ideal tool, when bullets must be seated tightly in their cases, a muzzle resizer is necessary. This is a die that screws into the handles in place of the double adjustable chamber, and forcing the cases into it constricts their necks—and their necks only). To take care of the thinnest of cases, these dies are made smaller than is necessary for most of the cases, which usually gives a greater reduction in size than is actually necessary, and leaves the case mouths too small to receive their bullets.

To expand or open up the mouths to receive the bullets, a shell expanding chamber is necessary. This is a chamber that carries a plug of bullet diameter, and costs another \$1.75. The cases are forced over and stripped off the plug in the usual manner, as this part also screws into

the tool handles. The spring-back of the brass leaves the mouths of the cases enough under size so that the bullets will be a force fit and be held securely enough for all ordinary handling, but not enough to resist the set-back of cartridges in a revolver; so, in reloading for this arm, crimping must also be done. In the .45 Auto, which can not be crimped, the bullets must be held by the tension alone, and a good practice is to use an expander that is .002" larger than the bullet, but to run it into the cases for only about 1/10 inch. This permits the bullets to be started easily and without danger of deformation, after which they act as their own expanders. This method gives the tightest possible fit.

The cap extractor is a small steel plug having a beveled shoulder against which the case may be forced to remove the remaining crimp; it carrying also a decapping pin at its upper end which forces the fired primer out. It is used in the D.A. Chamber, and the seating screw and chamber must be adjusted so the shoulder on the decapper does not bear on the crimping shoulder in the chamber. The crimp removing shoulders are frequently improperly formed and so full of tool marks that the cases grip them, but the plug is easily removed by dropping the case and plug into the priming hole and pushing the plug out by pressure applied to the projecting pin with the priming punch.

The priming punch is permanently set in the upper tool handle, over the center of the priming hole. Moving in an arc, it bears harder on one side of the primer than the other, frequently marks the primers, and must be used carefully in order not to damage them.

The Ideal tool, with its attachments, costs \$8.25. It is essentially a one operation tool, but is adequate for reloading small lots of ammunition. It does satisfactory work, and is highly desirable where portability is necessary. It is also essentially a one cartridge tool, and

usually a separate and complete tool is necessary for each caliber of cartridge. There are some exceptions to this, and where two or more cartridges are of the same diameter and approximately the same length, dies and other parts for them can be used in the same handles. The limiting factors are the size of the loading holes, which must be close enough to cartridge case size to guide the case and resist the lateral thrust of closing the handles; and the length of the threaded boss that receives the chambers.

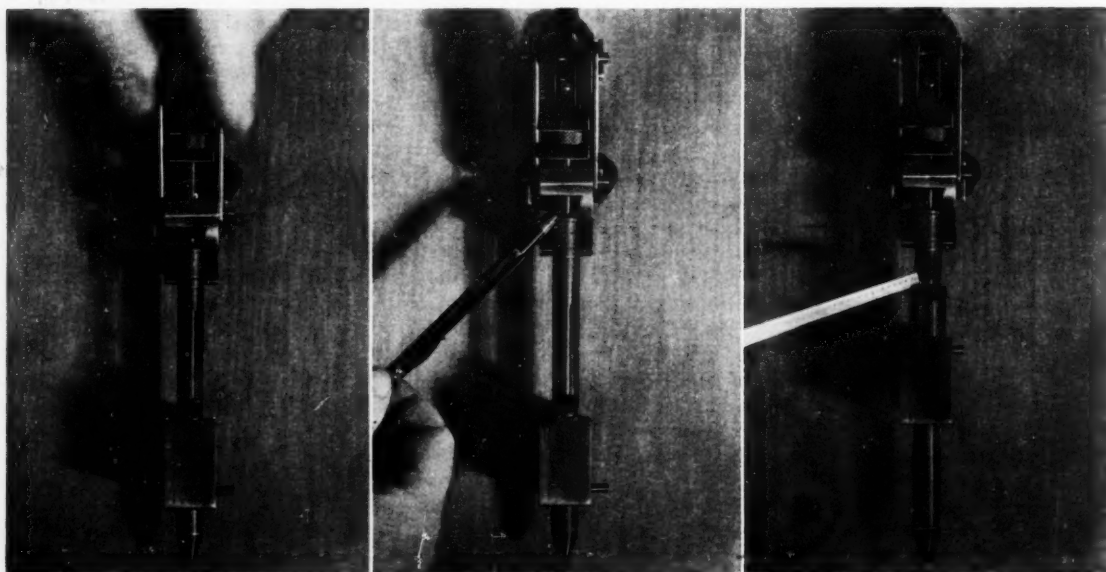
The Bond Model C Tool

This is a straight-line tool that clamps to the table. The mechanical part consists of a vertical frame of forged steel with a threaded portion at the top to receive the chambers or dies, and a lever at the bottom that actuates a ram. The top of the ram is slotted to receive the cap extractor and anvil (shell holder), which are attached to it by a simple pin forming a hinge. These parts are swung forward for the insertion of the cartridges and pushed in against stops to align them with the chamber.

The chambers are the same as were used in the older Model B or tong tool, but work much better in the Model C because of the direct thrust of the cartridges against them. The anvil has a form-cut suited to the head shape of the cartridge, and serves as a ram to push the cartridges up into the chambers; and it has a hook to pull them out. The under side of the threaded head receives a screw bushing or guide having a hole slightly larger than cartridge diameter. For decapping and priming, this bushing is replaced by another attachment, one end of which has a priming punch and the other a clearance hole for expelling the fired primers.

For decapping, this re- and decapping bushing is screwed into place with the hole down. The cases are slipped over the cap extractor, pushed back against the stop screw, and forced up against the bushing, which

Belding & Mull Model 26 reloading tool. Left to right: Extracting fired primer. Fresh primer in place for seating. Combination of neck die and expander. (Note different position of head for this operation.)



stops the head of the case but permits the primer to be pushed out into the hole. Priming is accomplished by inverting the bushing so that the priming punch is down, and removing the nut and decapping pin from the cap extractor. The latter now becomes a mere ram over which the cases are slipped. A primer is placed over the pocket, and the case and primer are forced up against the priming punch to seat the primer.

The double adjustable chamber serves also as an expanding chamber. For seating bullets, a bullet seating plunger is put into the top of the chamber, followed by the top nut which acts as a stop. This top nut may be adjusted to limit the movement of the plunger under the pressure of loading, and thus limit the seating depth of the bullet. The crimp is adjusted in the same manner as with the Ideal tool.

For expanding cases, an expanding plunger is substituted for the seating plunger. As this expander must pass through the bullet guide in the chamber, it is not possible to use an expander with a shoulder for removing the remaining crimp from fired cases. The only way this crimp can be removed with the tool is by reaming it with the cone shaped reamer in the top of the stop screw.

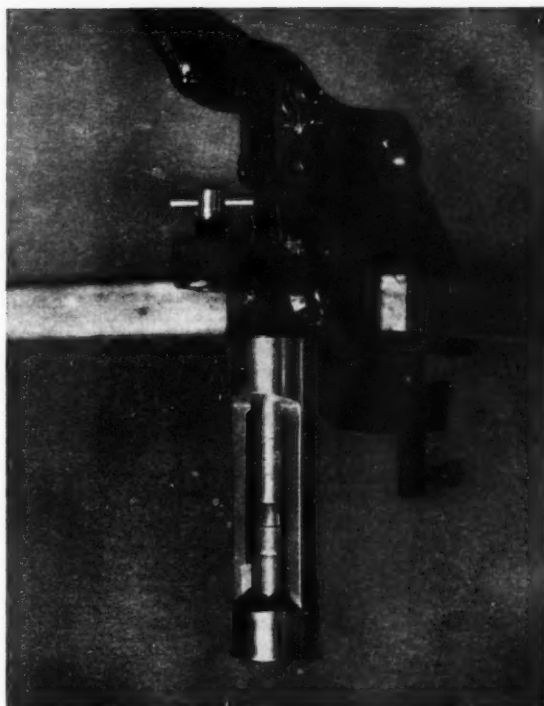
The muzzle resizer is of conventional design, and replaces the D.A. Chamber. Parts for almost any cartridge can be purchased and used in the basic Bond tool, and as the tool is clamped to the table, both hands are left free to do whatever is necessary. This makes the Model C a little more convenient to use than the Ideal tool, but it is strictly a one operation tool and not very well suited for reloading more than moderate quantities of ammunition.

Like any other tool which loads cartridges in a vertical position, neck resizing and expanding are necessary to prevent the bullets from receding too deeply into the cases, so the Bond tool is supplied complete with all parts necessary for doing these operations, for \$10.00. The cost of parts for changing calibers depends upon what the tool is originally equipped for, as sometimes some of the parts can be used for more than one cartridge. It all depends upon circumstances.

Belding & Mull Tools

These tools are made in two models. The Model 26 tool uses a separate manual bullet seater which crimps, and is therefore desirable for loading revolver cartridges. The Model 28 works on the same general principle, but has a seating chamber that works on the tool proper. This seating chamber will not crimp, and this model is suited only to such cartridges and loads as will work satisfactorily with the bullets seated friction tight.

The mechanical principle of the B. & M. tool is nothing more than a glorification of the old Ideal No. 2 re- and decapper. The tool consists of a base casting carrying a $\frac{1}{2}$ " rod that is the backbone of the tool. A slide or shell holder slides on this rod, and is actuated by a lever attached to it by two links. At the other end of the rod is a head to which the dies, etc., are attached as required. This head is adjustable as to position, as will be described later. The reciprocating action of this tool is utilized to perform one operation on the forward stroke of the lever, and another on the back stroke. This effects some



Note how the dies slide in a housing in the Yankee tool. A good principle, though attended by certain disadvantages

saving in time, but may result in some sacrifice in the quality of the product. The cases may be decapped on one stroke of the lever, and, by interposing a primer between the head of the case and the priming punch, be primed on the return stroke; but such practice, while you can usually get away with it, permits no inspection of the primer pockets.

The neck sizing and expanding are accomplished by setting the neck die with the expanding plug projecting out of it for a short distance. The fired case passes over the plug, to be reduced in the die on the forward stroke; and the return stroke pulls the constricted case from the die and over the expander, which opens it to a size suitable for receiving bullets.

As the travel of the slide is short, the part to which the dies are attached is hinged so that it may be lifted to slip the cases over the decapper. For the same reason, the head must be shifted for performing different operations, and as it is held in position by a taper pin that passes through it and the rod to which it is attached, the holes for this taper pin must be accurately reamed at the factory to locate the head for each caliber of cartridge. This makes it necessary to return the tool to the factory to have new parts fitted, and when drilled for a half dozen different cartridges, there are so many holes in the rod that it becomes a Chinese puzzle to figure out where to set the head for the different operations and cartridges.

The Model 26 bullet seater consists of a chamber, an iron base to set it in, and a bullet seating plunger. The chamber is reamed out at the (Continued on page 38)

The Old Coach's Corner

FROM TYRO TO MASTER

{With apologies to Captain Andrews}

DURING THE PAST SUMMER and early fall your Old Coach has been firing upwards of 3,000 rounds from his old match rifle, some of it in experiment, much of it in chasing the elusive X-ring. Given a first class, heavy barrel match rifle, the experiments were directed towards first finding the best ammunition for it, and then the best methods of holding steady and uniformly, and of squeezing the trigger. The form and methods of some twenty of our best master riflemen were also studied minutely.

Most of the shooting was done prone at 100 and 200 yards. A Master Rifleman for our purpose may be defined as one who can quite consistently, and under match conditions, turn in possibles with a majority of his shots in the X-ring. He won't do this every day of course—he will have his off-days. But the longer and harder he trains, practices, and studies, the fewer the off-days. A master's degree in anything is not achieved without a "hell-of-a-lot" of hard work and study—else it would not be worth while.

My readers, for whom I am writing, are the tyros and the near-masters. Particularly those who regularly turn in scores of 97 to 99, but who get a possible so seldom that it is an event in their young lives. As a result of my summer study I am convinced that any shooter who has reached this stage can, if he persists and is careful, reach the skill of the master in just a few short weeks, provided he uses the best equipment and adopts the practices of our best shots, including the suggestions I am about to make. Also, as I have said before, to get into top form and stay there, range practice at least twice a week, with dry shooting several times between shooting days, is necessary.

The first proposition that I tackled this summer, and the first that every shooter must tackle, is that of finding what ammunition shoots best in the particular rifle to be used. I tried practically all well known makes, varieties, and lots. Make and variety are not enough. The lot number, which is stamped on or inside the 50-round carton, must also be considered, as one lot number of a cartridge otherwise identical may give very different results from another. There is no use in trying to hold, aim, and squeeze for the X-ring with cartridges that won't even group in a 3-inch circle. Some of the most advertised makes performed in just that way in my rifle, but I found two makes that would average grouping in mighty close to 1¼ inches.

A bench rest and a good high power scope greatly facilitate ammunition testing. A test that does not include at least ten 10-shot groups, some of them fired on different days, will not indicate the true worth of a cartridge. Testing should not be done when the temperature is below 60 degrees, and the rifle should always be warmed up by firing about ten rounds before starting a test group. There is no use in going any further in your efforts to attain the master degree until you have found a cartridge

which will group consistently in the 10-ring in your rifle. Most of them won't, but if you have a good rifle, some will.

Having a first rate rifle and ammunition, the next thing is to adopt those methods of shooting that make for a steady, accurate aim, and a perfect let-off. In previous articles I have already indicated these methods, that is the firing point procedure that is common among really fine shots. But even these won't altogether completely eliminate your tremors of holding to the extent you desire, and there always are some tremors.

This past summer I experimented a lot with trigger squeeze. There are two methods of squeezing the trigger, but I believe there is only one satisfactory way. The funny part about it is that a shooter who thinks he is squeezing the first way may really be squeezing the best way. I tried squeezing the trigger down to the last ounce, and then when the aim was just right and I was holding with the minimum tremor, very carefully putting on that last ounce. It did not work well. It almost always gave me one or more slightly wild shots in a score, shots that just got outside the 10-ring. But when I also squeezed this last ounce on so carefully that I did not know just exactly, to within a half-second or a second, when the rifle was going off—that is, when the rifle went off unexpectedly, I got almost no wild shots.

This last method of squeezing of course limits your accuracy of aim and hold to the tremors that are occurring while you are squeezing on the last ounce. There are always such tremors. You can seldom see them with iron sights, therefore you cannot strive to eliminate them or minimize them when you are using iron sights. Your limit of steadiness of aim with iron sights is thus limited by what you can see. But if you use a high power scope you can always see your tremors, you know you are never holding precisely steady, and you can make a determined effort to hold steadier. That determined effort will result in your actually holding steadier after considerable practice. Also the more clearly you can see this tremor the better you learn to eliminate it, and you can see it much clearer with a very high power scope than with a medium power one.

I started in last summer with a 10-power scope, and with it I gradually became able to confine all my tremors to within the X-ring or perhaps a little better. That is, I could hold this steady for a period of three or four seconds, and that was plenty of time in which to gradually put on that last ounce of squeeze. When I did this I practically always got a ten, but I was not by any means sure of landing in the X-ring. With this 10 power scope I could see the X-ring very clearly in the very best lights, but in ordinary light I could not see it quite so plainly, although I could still see it. I estimated that the limit of tremor that I could see, and endeavor to minimize, was about a quarter to three-eighths of an inch from the absolute center. That is, I had a *(Continued on page 40)*

HANDICAPPED BARRELS

By H. J. BURKHARD

(Concluded from December issue)

IT'S HARD TO RENOUNCE OLD IDEAS and habits and beliefs that have persisted from generation to generation, but through inevitable change, most of them are finally abandoned. But some, whether founded on imagination, fact, tradition or pure cussedness, appear to be as firmly fixed as "the knot on the log," the rabbit's foot, the "hoop snake," etc.

Many thousands of years ago, following one of the recessions of the ice during the last Great Ice Age, one of our prehistoric grandmothers chased a cave-bear cub out of camp, squatted on her haunches again, and continued the grinding of flax-seed in a hollowed out stone with the Old Man's walnut knob-kerry, which she had snatched for the occasion. She noted with much interest that the oil enhanced the aesthetic appeal of the wood even though it was well covered with the stains and grime of many a tough encounter. And then she saw that the sweat, dropping from her brow onto the wood, left no trace. Grinning, she arose to get the kinks out of her back, hitched up her breech clout, and pondered over her discovery as she rubbed the wood with her strong, oily hands.

Being boss of the tribe, she called them together, shook the long black hair out of her eyes, hitched up her breech clout again and forthwith ordained and decreed that henceforth, all wooden weapons and weapons of wood and stone, whether used for the peaceful settlement of domestic differences, for war or for the slaying of the cave-bear, the saber-tooth tiger, the woolley rhinoceros, or other varmints, be adequately and repeatedly dunked into the Oil of Flax and that after each dunking they be vigorously rubbed and polished, so that the rain may leave them dry and so that they glint like the sun upon the water.

I have been unable to find any official record of this momentous event, and in fact haven't even looked for any, but believe it or not, that was the auspicious beginning, and the end is not yet. For we still dunk the stocks of our weapons in the Oil of Flax, and dunk and polish, and dunk and polish without end, so that they may be impervious to moisture and so that they glint like the sun upon the water.

Even though this screed may be dry reading, it has to do with humidity and the absorption of moisture and the evaporation thereof, and with linseed oil and other things. But first of all (I hate to do this, but somebody's got to do it, and it may sound like heresy or worse) *linseed oil has no value whatsoever as a moisture-proofing finish for walnut or any other wood, however applied, and therefore it cannot prevent swelling, shrinking and warping of the stock, with all the evil consequences of distortion.*

Nothing better is known to enhance and display all the beauty of grain, figure and color of fine walnut and to

produce the beautiful satin-like sheen so pleasing to us discriminating cranks, but here its value ends.

If documentary evidence is necessary to convince the unbelievers, read Circular No. 128, U. S. Department of Agriculture, U. S. Forest Products Laboratory, Madison, Wisconsin, by Geo. M. Hunt, Principal Chemist. Also read other and later articles from this and other sources which may be found at large public libraries. Quoting from this Circular: "An *important* fact shown in Figure 5, is the low effectiveness of five coats of linseed oil followed by two coats of prepared wax. This was the standard finish for airplane propellers at the time and was supposed to be quite effective against moisture changes."

The Figure 5 referred to is a table showing the effectiveness of seventeen different treatments, with some thirty variations of them, running the gamut from linseed oil, through waxes, varnishes, lacquers, enamels, special paints, aluminum paints, metallic foils, etc., and of all of these, *linseed oil* was shown to be much the least effective, regardless of how it was applied, and its efficiency was almost nil. The table further shows that *soaking* the wood in linseed oil and under identical test conditions of 72 hours in air of 95 humidity, actually permitted the oil soaked wood to absorb more moisture than the natural, plain, untreated wood.

The only practical value of any linseed oil finishing process is the slowing down of absorption and evaporation, which is of very little value for our purpose. There are other processes by which wood can be made practically moisture proof and which would be just about as satisfactory to us as soldering up the stock in a piece of the old tin roof.

The sketch, Figure 1, from the above mentioned Circular No. 128, will give you a good idea of what warpage to expect from blanks cut in various ways from the log, and the log in the sketch is *presumed to be straight grained*. Study this carefully and then compare Figure 1 with Table A, and you will note that the tangential shrinkage is about double the radial shrinkage whether in air dried or oven dried wood. And note that the longitudinal shrinkage, so far as gunstocking is concerned, is practically nil and may be entirely disregarded—but only if the wood is straight grained.

Now, while looking at Figure 1, and keeping in mind the constantly changing humidity, try to imagine what will happen to barrel and action in a one-piece stock made of beautifully figured butt-log walnut throughout its length; or in a cross-grained forearm with some colorful burl thrown in for good measure. And particularly if hog-tied to the fore-arm by a tight band!

The swelling of wood during the absorption of water exerts an almost unbelievable force. In the splitting of millstones from the rock in place it has been the practice to drill holes in the stone into which plugs of spruce

or pine were driven, the plugs being then soaked with water, and the swelling of the plugs easily splitting the stone.

So, we'll continue to dunk our stocks in Oil of Flax, placing no dependence whatever upon the oil as a protection against moisture effects, and try to lick Old Man Warpage through mechanical means and the judicious application of horse sense.

Some years ago, after a discussion of floating barrels, stocking, etc., with Colonel Townsend Whelen, I received a letter from him, a part of which is so apropos here that, with his consent, I am quoting from it, and from a more recent one:

"Recently while stationed at Springfield Armory we made a most exhaustive investigation as to the warping of walnut stocks. The walnut at Springfield Armory has been seasoned by air drying ever since 1917 under most ideal conditions, and in addition is kiln dried for 45 days before use. It is probably the best seasoned lot of walnut in existence. We tried this walnut treated in various ways in an effort to find the one method of treatment which would best prevent warping. The investigation was a most scientific one, with elaborate and expensive apparatus, fixtures, and gages for measuring warpage. We tried treating the walnut in various ways, from the ordinary seven linseed oil dips to all kinds of lacquers and fillers that could be suggested by commercial firms and the Bureau of Standards. The result was that not one of the methods shows any superiority over ordinary raw linseed oil dipping. Walnut, no matter how treated, is in a constant state of warpage. Some pieces warp more than others, due probably to grain and density. But all warp, and all treatments showed decided warp-

age when examined at two-week intervals with instruments and gages. The warpage is sufficient to actually bend the rifle barrel" (in some cases).

* * *

"The solution would seem to be a floating barrel, not touching the forearm, with sling swivel attached to forearm so that sling tension would not bend the barrel. But I am not sure that this will always give good results, although it has given good results in many cases. I think that we are interested, not only in having our rifles and ammunition shoot small groups, but also place those groups with the same location of center of impact no matter what the firing position be. This because a rifle is an instrument to hit small objects at a distance, and its [measure of] efficiency would seem to be the distance at which it will surely strike a small object * * *.

"All rifles with which the barrel has a snug fit in the forearm channel, no matter how the bands or sling swivels were secured, shot from half a minute to two minutes higher when used on a bench rest, and the forearm rested on a padded fork, than they did when held in the hands only * * *.

"For myself, personally, I am not so certain that this is the best practice either. I personally prefer the ——— method, although I admit that no matter how perfectly the rifle is bedded in its stock when this ——— method is used, there is more danger that a slight warping of the stock may place side or down pressure on the forearm screw, which is not so liable to happen when there is no attachment of forearm to barrel at all * * *.

"Some years ago Springfield Armory made an investigation of the accuracy of rifles assembled with floating barrels and came to the conclusion that no fine accuracy could be obtained in that way. But I am not so sure

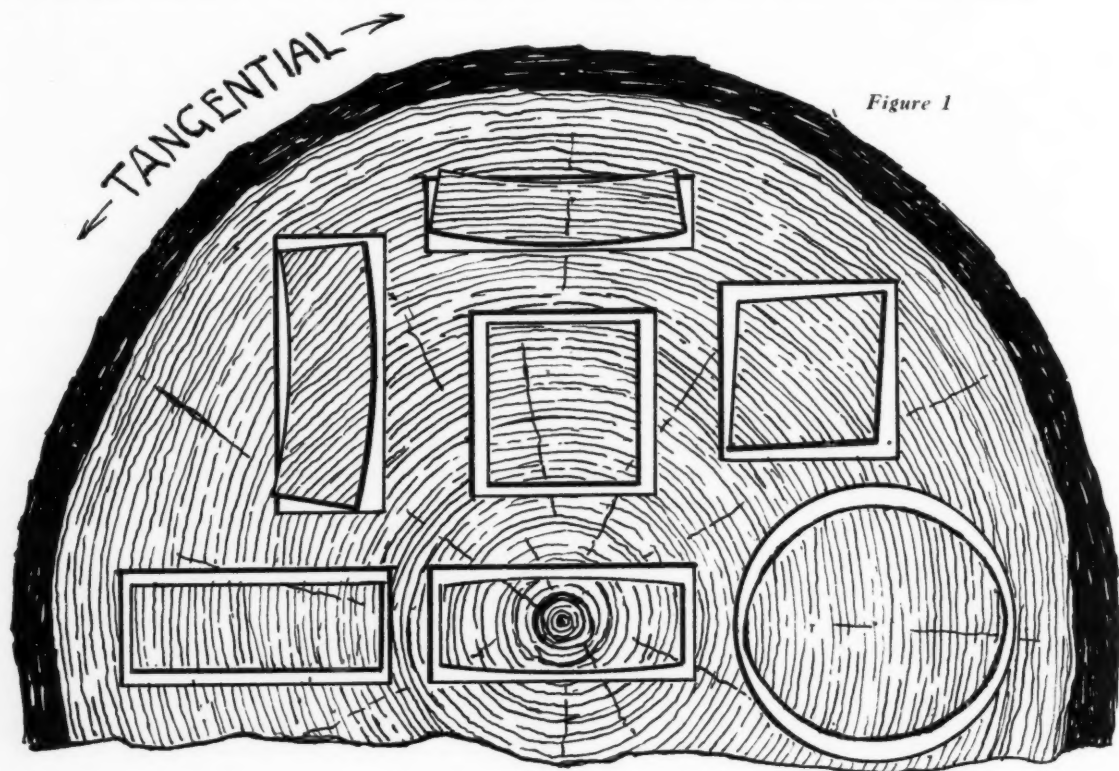


Figure 1

that the test was properly conducted and that the conclusions were sound * * *. In light of recent experiences, and on further thought on the subject I am inclined not to put too much reliance on the experiments with floating barrels at Springfield Armory, because those experiments were all made with the rifle held in the Woodworth Cradle * * *."

The military rifle must unavoidably be a compromise between good and consistent accuracy and the necessity for so building the stock as to protect the hand during rapid firing and to some extent protect the barrel, and at the same time provide a foundation for the bayonet. Its cartridge must give high muzzle-energy with not too severe recoil, and while conforming with all these demands the weight of the rifle may not exceed a certain definite limit. To meet these requirements the barrel must be lighter and therefore more flexible than is desirable, and the stock so made as to have sufficient strength with the least possible weight. The light weight and high flexibility of the stock, especially between the rear guard-screws and a point near the recoil shoulder, combined with machine inletting, is probably the cause of the failure of these rifles to give satisfactory accuracy with full floating barrels. The stock being flexible and relatively weak here, both vertically and laterally, permits excessive and erratic vibration of barrel and action if the barrel is full floating. In addition, the unavoidable mass production methods, while producing a nearly perfect rifle for military purposes, do not permit perfect inletting and bedding from a strictly target shooting standpoint. But the stock design and other requirements of the military rifle would be as misplaced on target and sporting rifles as rubber boots on a duck.

With the elimination of the full-length stock one of the greatest problems of the military rifle is avoided, the full length stock always having given the armories of the world more headaches than any other item having to do with consistent accuracy.

It is probable that the present degree of accuracy of the best bolt action military rifles cannot be improved on so long as the bayonet and the full-length stock are retained; nor is any better accuracy required for this purpose.

This discussion applies only to those few bolt actions which are generally considered best for target rifles and the best sporting rifles; and, everything considered, for best accuracy and a stable zero in target and the better sporting rifles, the full-floating or semi-floating barrel seems the only solution of the shrinking, swelling and warping problem. But a full-floating or semi-floating barrel cannot give these results unless the receiver is

very carefully inletted and bedded in a very stiff stock with the sidewalls of receiver and the tangs fitting the wood evenly and snugly to give good lateral support. A receiver and barrel perfectly inletted in this way, when pushed down into the stock, with no stock screws in place, cannot be moved laterally at all, and endwise less than 1/32nd of an inch; and cannot be rocked laterally or lengthwise.

Any barrel, and especially a light barrel, can kick up a terrible row if not properly controlled through correct fitting of the receiver in its channel, as, owing to the length of the barrel compared to the distance between stock screws, it exerts a great leverage and the stock screws alone will not prevent erratic vibration and the creeping of the receiver in the stock, even though the bedding on the floor of the channel be perfect. Bear in mind that the stock screws in bolt action rifles are only from 7 to possibly 8 1/4 inches apart in the longest actions, and some bolt actions have a too flexible receiver between the screws; and these flexible receivers are not confined to obsolete bolt actions.

The rigidity of the very heavy barrel is of more importance than its weight, but if great weight in a rifle were no obstacle to its use for general purposes, the diameter and rigidity of the barrel could be so great that defective fitting or warping of the stock could not exert sufficient pressure against the barrel to spring it or interfere with its normal vibrations; and the zero of the rifle and its point of impact would change only through variations in the ammunition and through extraneous causes.

It being hardly practicable to pack such a rifle around through the brush on the hurricane deck of a mule, we are confined to a reasonable weight for each type of rifle.

There seems to be a pretty general understanding that a barrel which rests in the forearm with more or less pressure, but is in no way attached to it by a band or other fastening, is a full-floating barrel. But herein, a barrel which is not attached to and has no contact whatever with the forearm is referred to as full floating, and a barrel with contact of only one to possibly five inches immediately ahead of the receiver, is referred to as a semi-floating barrel.

Rather than permit a barrel to fully float (which is not practicable with a long barrel of great weight) it would seem better practice to very carefully bed the barrel in the stock (depending upon its weight, shape and length) for one to five inches immediately ahead of the receiver for its full half circumference; the barrel here to have considerable pressure against the wood but with only about half the pressure per square inch exerted by the receiver against the flat floor of its channel immediately behind the recoil lug. The remainder of the barrel to be entirely free from contact with the forearm. With the barrel and receiver so bedded, as compared to a barrel entirely free, the effect is equivalent to lengthening the receiver without reducing its rigidity. This gives the receiver and barrel much firmer bedding in the stock and therefore better control over barrel flip and erratic vibration, and without damping out normal vibrations. It permits the reduction of the usual excessive tension on stock screws, and with no tendency of the

Table A

Range in average shrinkage of a representative number of American woods:

Direction of Shrinkage	From green to oven dry.	Green to air dry.
	Percentage of green size	Percentage of green size
Tangential	4.3 to 14.0	2.1 to 7.0
Radial	2.0 to 8.5	1.0 to 4.2
Longitudinal	.1 to .2	.05 to .1
Volumetric	7.0 to 21.0	3.5 to 10.5

screws to work loose from recoil. It can easily be shown that excessive tension on stock screws can not only readily spring some bolt action receivers but materially change the relation of the barrel to forearm, if bedded in the usual manner, which of course changes the rifle's zero and may cause it to shoot all over the paper. But in many stocks very heavy screw tension is necessary to offset bedding defects and produce even fair accuracy. Rebedding is the only remedy.

The flat under-side of the receiver must have much greater pressure against the wood than any other part of the receiver when the stock screws are tight, and only light pressure of the hands should be necessary to seat the receiver-barrel assembly to the bottom of the channel when the inletting is complete; and this moderate resistance should all come from the vertical portions of the receiver. When the stock screws are now drawn tight, there will be a very slight compression of the wood on the channel floor near the stock screws, as no receiver is rigid enough to resist very heavy tension of screws without springing slightly. The more flexible the receiver, the more carefully the effect of this must be watched in the final bedding. When the screws are tight the curving or overhanging parts of receiver should exert only very slight pressure against the wood, and vigilant care must be taken that these parts have no tendency whatever to cant, twist or misalign the receiver in its channel. There must be no trace of wedging effects and the barrel at forearm tip should be exactly centered in its channel, when the guide screw and front barrel guide are removed and the stock screws tight.

It is infinitely easier to guard against twisting or misalignment of the receiver-barrel assembly in the channel as the work progresses, than to remedy such a mess after the error has become great.

The magazine should not be in contact with any part of the magazine well but have moderate clearance when the bedding is complete, and no other contact in the stock should interfere with complete and perfect contact between recoil lug and recoil shoulder, even after the rifle has been fired thousands of rounds.

To maintain a constant zero no part of the receiver or barrel should be under stress, twisting strains or tension, excepting only the tension of stock screws whose only function is to hold the receiver and barrel rigidly in place.

The very heavy semi-floating barrel may not require much clearance in its channel even at forearm tip, but a light barrel with its much more violent contortions will need a substantial clearance and with the clearance increasing toward the forearm tip to prevent any contact during barrel contortions, with an additional margin of safety for warping of forearm. The utility of this gap between the barrel and forearm is much greater than its beauty.

When spotting-in during inletting, it is my practice to frequently draw up stock screws to about half normal tension and then hold the rifle perpendicular and jolt the heel of buttplate three or four times against a pad on the edge of the bench, tightening the screws between jolts. This forces recoil lug back against shoulder in stock and clearly shows if there is any pressure where there should be none, and if there is excess pressure against

tangs or any other portion of the receiver which tapers toward the butt. Any wedging effect will be detected at once through the spotting dope, and when the job is complete the recoil shoulder will take all the recoil and you can safely let the entire tang and rounded parts of the receiver just contact the wood with no danger whatever of any part of the stock splitting from recoil. And when the rifle goes into use it will not be necessary to fire several hundred rounds to hammer the assembly back to where it should have been at the start. To guard against stock screws taking recoil, the stock-screw holes, and bushings if any are used, should be so managed that they tend to draw the recoil lug against the recoil shoulder. I never could see any legitimate excuse for a bushed stock-screw hole in a hand-made stock. If unfortunate enough to drill the hole for the tang screw cockeyed, straighten up the hole, enlarge it, put in a bushing—and tell 'em it strengthens the stock.

The upper edge of the recoil shoulder being approximately three-quarters of an inch below the axis of the bore, the recoil tends to force the barrel out of alignment with the receiver and to buckle it, with the recoil shoulder as a pivot for this force; just as the entire rifle tends to revolve around the point of contact between buttplate and shoulder, when fired.

This tendency of the barrel and fore-part of receiver is resisted by the stiffness of the receiver and tension of stock screws, and this, added to all other forces set up in the barrel which must be absorbed by the receiver through the recoil lug, indicates a very rigid receiver with the barrel screwed in very tight and with the shoulder of the barrel in even and perfect contact with face of receiver ring.

It has recently been demonstrated that a small-bore rifle with an excellent, heavy barrel but relatively flexible receiver would not hold its zero without a barrel band. This rifle having very light recoil, rebedding by hand might remedy this condition. The erratic shooting of the take-down rifle is an exaggerated but typical example of the effect of deficient rigidity between barrel and receiver.

It may be excusable to repeat that the most important steel-to-wood contact is that between the recoil lug and recoil shoulder. Its area is none too great, its position in relation to the direction of recoil is not perfect, and its job is to absorb all the recoil after it has been transmitted to the receiver. No part of its face should be cut away to avoid splitting of the stock by recoil as this might easily double the force of recoil per square inch against the recoil shoulder, and permit the battering backward of its face and put part of the recoil load on stock screws, tangs, magazine, etc., where it does not belong. If properly made of good wood a stock cannot be split by normal recoil.

The above paragraph applies only to best bolt-actions, there being certain others still at large in this unhappy world which, like the young woman with spindling legs, have no visible means of support. In the rifle I have in mind a little of the recoil is absorbed almost everywhere, but nowhere in particular.

Now, let's assume that one of our best stockers is well advanced in the making of a fine stock for your new special target rifle, using the blank you (*Continued on page 40*)

SINGLE-SHOT RIFLES

By J. V. K. WAGAR

(Concluded from December Issue)

Three New Tip-Ups: Stevens .22-.410, Savage Utility, and Marlin .22-.410

INEVITABLY TOWARD THE END of a series like this one, discussing perforce many obsolete arms which must be included as single-shot rifles, the more emotional of my friends approach with evidences of tears in their eyes, shaking hands laid upon my shoulders, and sniffles on their sleeves, and begin telling me about how those were the good old days—the days of Sharps, Ballard, Remington, and other one-shot weapons of the frontier and of early American rifle ranges.

Those were great days, and we shall probably never again associate rifles with as much game that will come at one in addition to the many kinds that always run away; nor shall we soon again have rifle ranges at the edge of nearly every town, safe for years from new suburban allotments. But these are great days, too. The years 1939 and 1940 brought us three remarkably fine rifles of most practical design for many American shooting conditions in which a single-shot can today be tolerated, for in these years Marlin, Savage, and Stevens went into production on new, man-sized single-shot rifles.

All three new rifles are tip-ups, for they were all made in shotgun combinations; but they were also made in recognition of an American tradition: the desire of the American woodsman for a compact arm having one rifle and one shotgun barrel. Other nations have also expressed interest in combination arms—the Britisher with his Paradox and the German with his *drilling*, but the slightly different American desire is outlined in relic over-under rifles and shotguns in flint lock and percussion types, in the Maynard with interchangeable shot and rifle barrels, in occasional hand made breech-loading rifle and shotgun over-unders, in .32-40 and .38-55 rifle barrels which mail order houses sold for insertion into one of the tubes of a double-barreled shotgun, in the Marble's Game-Getter, and finally in the take-down '99 Savage high-powered rifle with interchangeable .410 shot barrel. Today we have the same old desire, and three new answers.

Being tip-ups, these and other suitable rifles based upon this system give a list of advantages seldom duplicated in other systems. With them a low mounted scope may be used without interference with the latch, or with loading and unloading processes. Gas from broken primers and cases escapes between the barrel and stand breech, with little danger to the shooter. Quickly interchangeable shot and rifle barrels can be used, once properly fitted. Taking down for compact storage is easily accomplished. Barrel cleaning from the breech and breech-face cleaning are unsurpassably simple. Trigger and hammer parts can be well housed against dirt admittance without affecting the opening and closing mechanisms. The diameters of barrel breeches advisable for powerful cartridges need not be reduced to fit a standard receiver

ring. No other type of firearm can be made more silent in operation. With the use of a sturdy underlever and link, as in the Maynard rifle, tremendous seating power can be generated, although the average tip-up rifle seats cartridges well by virtue of the broad face of the standing breech, plus the leverage afforded by a long barrel.

When I bought the three new tip-ups quite early in 1940, I found great differences in their availability. The Stevens .22-.410 over-under was already found in practically every hardware store and gun shop. Apparently the Stevens name, the .22 Long Rifle and .410 shot shell combination, a price of approximately \$14 or even less in the cut-rate shops, plus the features of the gun itself, made it instantly popular. The Savage Utility combination with the regular .22 Hornet or .30-30 rifle barrel and 20, 16, or 12 gauge shot barrel was more gun than the average person wanted just for something handy, yet was less than what was wanted for a serious, long distance, big-game or wildfowling trip, and with a price of around \$19.35 was not found in most small shops.

The \$39.90 charged for the Marlin .22 (Long Rifle, Bee, or Hornet)-.410 over-under kept this model out of a town as large as Denver, where I visited all the gun shops one could expect to stock this rifle, only to be told that none was on hand, but could be (and was) ordered at once.

Apparently, then, the three guns are regarded as handy, combination purpose guns which dealers believe will be liked in accordance with the lowness of prices asked. Obviously they will not materially invade the specialized target, deer hunting, pheasant, and waterfowl shooting fields. Indeed, the combination rifle and shotgun may be troublesome along watercourses in districts where rifles are prohibited for duckshooting, especially where game wardens consider fouled rifle barrels evidence of illegal shooting.

The Stevens .22-.410

For anyone who can be satisfied with the .22 Long Rifle and .410 shot shell cartridge, and with the sights furnished or those which can be fitted, this is almost a perfect firearm for the purposes it was intended to meet. It is a remarkable value at even the new price of \$15.10.

THE AMERICAN RIFLEMAN Dope Bag Review, "Farmers' Friends," of November 1939 gave the results of careful tests with this rifle as well as with the Savage Utility Gun. Eric Dale's article, "The Stevens .22-.410," in the August 1940 AMERICAN RIFLEMAN listed other good points. Those interested should read these articles, for I shall duplicate them as little as possible.

One of our shotgunning crew in Colorado is quick enough to collect his full share of pheasants and rabbits before they get out of .410 range, and with one of these Stevens .410's he is usually one of the high guns in any party, both as to total numbers of game shot and in percentage of kills.



I have used a large number of $2\frac{1}{2}$ and 3" .410 shot shells, old UMC and WRA CO .44 XL cartridges, some .44-40 shot loads, and reloads made of .40-70 Ballard cases with beveled rims, 10 grains (weight) of duPont Shotgun Smokeless, and $5/16$ ounce of shot. All give excellent 25-30 yard patterns and killing records with the exception of the light, erratically spreading .44-40 shot loads.

The .22 barrel is effective. Its small outside diameter of .432" at the muzzle and .433" at the breech are offset by its secure anchorage to the shot barrel beneath. For tin can perforating and ordinary small game and predator shooting from usual hunting positions it is quite satisfactory, and on standard targets for 50-foot and 50-yard distances, I have no trouble in reaching the low nineties in sitting and prone positions despite the sights furnished.

Sights for combination rifles and shotguns are, of course, bound to be problems. What is keenly accurate for the rifle may be too slow for shotgun shooting. The first Stevens .22-.410 front sight was a round knob of white metal atop a small ramp. This was a good shotgun sight, but was poor for rifle work. Later models retained the ramp, but used a non-reflecting Patridge type front blade which proved better for rifle shooting and quite good for the shotgun.

The tiny open sporting rear sight does very well with the shotgun barrel, but is too rounded in outline to give good alignment with the front sight when shooting the rifle barrel, to which it is attached by a dovetail so minute

*First three pictures, top to bottom: Stevens .22-410
Last two: Savage Utility Gun*

that loosening often results. A rear sight base partially encircling the rifle barrel, as seen on World War No. I Lebel rifles, is more secure, but is more difficult to make. The Lyman rear sight adapted to this model is splendid for those who crave more accuracy with "iron sights."

A 1X scope with wide field is the best sight for a combination rifle and shotgun, and can be secured to the Stevens .22-.410 by a side mount attached to the heavy shot barrel, or by top mounts cut to straddle the rifle barrel and to fasten to the shot barrel below.

Eric Dale on page 31 of the September 1940 *AMERICAN RIFLEMAN* described an excellent front sight for this rifle. However, each reader should check for himself one detail recommended by Mr. Dale, who advised that the rear of the sight blade be inclined forward to reflect light toward the shooter. This suits many folk and has the added advantage of pulling easily from a scabbard or case, but for other shooters such a sight fades badly against light backgrounds on dull days, and a Patridge or undercut blade proves better.

A counterbore at the muzzle of the rifle barrel permits fastening the front sight ramp by means of a screw threaded entirely through the upper part of the rifle tube. The counterbore in my rifle is .8" deep and large enough to loosely fit a 7-mm. bullet. This design protects the rifling at the muzzle, but it complicates cleaning by permitting the patch to slip off a knobbed rod as it passes into the counterbore, unless one holds a 7-mm.

bullet or rod of proper size against the muzzle of the rifled portion while cleaning. A filler of great enough length to be easily detected and loose enough to fall out when unsupported is suggested for the forgetful.

The many who feel safer with a hammer and who worry about cocked mainsprings tiring, are pleased by the Stevens hammer: a coil-spring-impelled, rebounding type firing with certainty yet jarring little upon striking, and rebounding to a safe position removing pressure from the firing pins. The upper, .22-caliber firing pin is retracted by a spring, and the lower firing pin is contacted by .410 primers at a less abrupt and hence less dangerous angle; so that all likelihood of firing fresh cartridges as the action is closed is eliminated.

Trigger pulls are good despite a construction which readily admits dust and grit to the hammer notches clearly visible through the opening for the trigger above the guard.

The top-lever can be pushed either way to open the gun, suiting both left- and right-handed shooters. The shift button by which the shooter selects the barrel he wishes fired is positive in action and in time becomes second nature with the shooter, shifted to a desired barrel selection instinctively; although I note that there is always some firing of .22's when shot are needed, and vice versa, whenever such guns are around. For this reason it is best to habitually carry them ready to shoot the shot charge, with its shorter range.

All important springs are of the coil type, and action parts are simple, strong, and well hardened. The dark

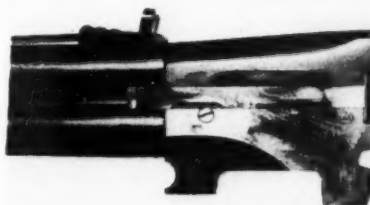
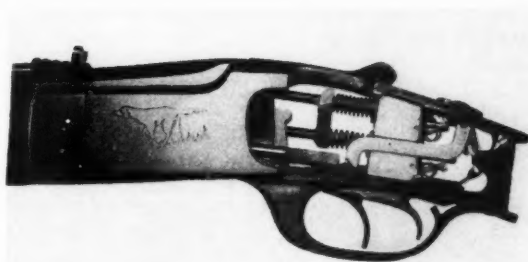
All pictures on this page are of the Marlin .22-410 Model 90 Over-Under

case-hardened action finish is attractive, and I have preserved mine with clear lacquer. The action should in ordinary use close tightly indefinitely, but if wear should occur, this action, like others of its type, can be tightened by skillfully welding metal to locking bolts and points of barrel contact with action sides, and then dressing to a smooth, tight fit.

The buttstock fastening is excellent, combining good principles of mechanical design with economy in inletting. Upper and lower tangs are integral with the action frame, and with parallel sides do not lead to splitting. The front end of the stock is caught beneath an undercut rear shoulder of the action on each side, preventing spreading of the stock and consequent splitting. A semi-circular forward projection of the stock on each side of the action prevents up and down movement of the stock against the rear of the action. A strong, although light, bolt through the small of the stock reinforces the wood at its weakest point and holds it securely in place.

The rear of the tang extension is sufficiently rounded that it will tend to split the stock unless the wood is relieved enough to prevent excessive wedging. Another place to watch is any excess wood that extends outside the undercut rear shoulder of the action, and which will split off as pressure is applied unless rounded so that all pressure occurs within the shoulder.

The design is such that one should be able to take



up stock wear indefinitely, with stocks of the fine walnut placed on earlier models as well as with the new Tenite stocks.

The Savage Utility Gun

This is a single-shot shotgun type hammerless action with a rifle barrel of .22 Hornet or .30-30 caliber at regular prices, or .25-20 or .32-20 W.C.F. caliber at a few dollars more; and with an interchangeable shot barrel in 20, 16, or 12 gauge at regular prices, or in 28 gauge or .410 caliber at a small additional cost.

Or, one wanting only the Savage single-shot rifle may buy the action fitted with a rifle barrel in any of the listed calibers, for \$15.00.

This is a rugged arm of great value for those who live in or immediately adjacent to good game regions, in which the cartridges available are desirable and in which frequent opportunities for seeing game remove the necessity for repeating mechanisms; or for those with sufficient experience and skill to enjoy the slight handicap of a single-shot arm.

With Savage Utility shot and rifle barrels being made heavy enough for serious work, few men will ever attempt to carry both along while hunting, and change from one to the other as occasion demands, although both might very well be carried in the car or taken to camp to provide whatever gun one needs for each special trip.

This hammerless action is unusual among its type in that the top-lever cocks the firing pin as it unlocks the action for opening. This is an excellent arrangement, nicely engineered, for the cocking effort is but slight, the firing pin is positively cocked and then locked by the automatic safety slide atop the upper tang, so that the fresh primer of the next cartridge loaded cannot be fired by the closing action. Then, too, it is easier to hinge the barrel open with the firing pin already cocked than in many actions which cock with the opening motion of the barrels.

The action parts of this gun are few, simple, strong, and well hardened, and, operated by coiled springs, should stand even more than the great abuse given the action which fired my .22 Hornet and 16-gauge selection of barrels. The trigger pull is a bit heavy, weighing 5½ pounds, but is very crisp, and as soon as the gallery season was over and I had laid away for the summer my light-triggered Model 52 Winchester target rifle, it did not seem at all objectionable.

Some of the parts worked rather stiffly until well oiled and often used.

The rifle barrel sights consist of a gold bead front atop a sturdy steel ramp fastened to the barrel with two screws, and of a standard type open sporting rear. The ramp on my Hornet barrel is sufficiently off center that my bullets went eight inches right at 50 yards until I moved the rear sight over to a compensating position. The barrel breech is tapped and drilled for a Weaver side mount, but in the country I have been hunting, so few shots must be taken at over 100 yards that the open sights and .22 Hornet cartridge are all I can ask. However, since this gun has separate shot and rifle barrels, the best sights for each may be installed without interference with the other.

Both barrels on the Savage Utility Gun are fitted with positive, powerful ejectors; so powerful, in fact, that if they were, as a backwoods friend of mine calls them, "dejectors," the owner would be thoroughly dejected. With such ejectors and an action cocked by the top-lever, an owner can develop considerable speed of fire if needed.

The Stevens .22-.410 has, by comparison, a constant pressure extractor which starts the chambered or fired .22 Long Rifle cases, and a simple extractor for the .410 barrel.

The method of buttstock application is exactly like that described for the Stevens .22-.410, which leaves little to be desired.

My Savage Utility .22 Hornet weighs 6 pounds, 13 ounces, and the 16 gauge, 6 pounds; weights heavy enough to utilize the efficiency of the cartridges fired, yet light enough to be easily carried by anyone.

The firing pin on this gun is small and well fitted to take care of high pressures, and the general construction protects the shooter from gas. I had the battery cup break out of a long range 16 gauge shot shell, and suffered no discomfort whatever.

The Marlin Model 90 .22-.410 Over-Under

In appearance the Marlin over-under is probably the leader of the three new tip-ups. In it both slender barrels have the same outside dimensions; the action has all the smooth, racy lines of which a hammerless is capable; the lines formed where the buttstock and barrels fit into the action are very pleasing.

The top barrel is regularly made for the .22 Long Rifle cartridge, but it is also produced for the .22 Hornet or .218 Bee cartridges, since the amount of metal and the special steel used in the Marlin barrels permit chambering for these more powerful cartridges. In all three rifles the lower barrel is made for the 3" .410 shot shells.

I chose the .22 Hornet-.410 combination, for stores in our part of the country still stock more Hornets than Bees, and I secured a gun having exceptionally smoothly finished barrels which have given great satisfaction.

In selecting the barrel one wishes fired, one has only to press the rear trigger for the rifle barrel and the front one to fire the shotgun. So arranged, the rifle trigger gets the greater advantage from the pistol grip support contributing to good squeezing. Both triggers are light and crisp. Once the shooter is familiar with the gun, barrel selection is automatic, but while acquiring familiarity the shooter may do well, in settled areas, to carry the rifle barrel empty.

There are, as in most true double guns, two firing pins, sears, and springs in addition to the double triggers mentioned. The upper pin is made small to handle the high-pressure Bee or Hornet cartridges, while the lower pin is made larger (taking advantage of lower shotgun pressures) to displace as much primer as possible when it strikes. With the first motion of the top-lever, both firing pins are retracted enough to clear the primers; then are cocked as the barrels are hinged down to expose the breech.

The action parts are few, simple, and well hardened, and all springs are of steel wire, whether of coil form or otherwise. Since I have not fired (*Continued on page 37*)

This Handgun Game

By WALTER F. ROPER

FROM THE NUMBER OF LETTERS received during the past month it is evident that a lot of good revolver shots are having trouble getting the kind of scores they should with the .22 auto pistol, so I propose to put down some things I have learned about these guns which I hope will help.

I could sum it all up by saying that the auto must be gripped a little firmer, and that the trigger finger should rest on the trigger in the center of the end joint of the finger so that the pressure on the trigger will be straight to the rear. Those are the facts, but, as we are more apt to do things in the right way when we clearly understand the reasons for them, let's go back to fundamentals and see why the automatic pistol requires a little different handling than a revolver.

If you will take a revolver in your hand, you will note that when in aiming position your wrist is bent downward until the top surfaces of your hand and wrist are just about in a straight line. Do the same thing with an automatic and you will see that the wrist is not bent downward anywhere near as much. This means that with the automatic the wrist joint is just about in the center of its possible up and down position, while with a revolver it is almost down to its lowest possible position. With a revolver, therefore, the weight of the gun really locks the wrist at the low position so that the joint is automatically stiffened even with the very lightest grip on the stock. This is decidedly different from the condition of the joint when an automatic is held, for with this type of gun the wrist joint is free to move in any direction and with a light hold it will surely do so. To produce the same degree of steadiness in the wrist, therefore, it is necessary, when shooting an automatic, to grip the gun a little tighter as this is the only way to get the stiffness needed.

Quite often one reads or hears some shooter say that an advantage of the automatic type of handgun is the lower position of the barrel in relation to the center of the wrist joint around which motion takes place. It has always seemed to me that with measuring scales so easily obtained and actual measuring so simple this remark is rather silly, for with a revolver held properly the barrel is little, if any, further above the top of the hand or the center of the wrist joint than the barrel of an automatic, so that the leverage through which the recoil acts to bend the wrist is about the same in either gun. What does make a difference is the condition of the wrist joint, and to make it able to resist the recoil as well with an automatic as with a revolver it must be stiffened by holding the gun tighter.

There is another reason for the tighter grip with an automatic and that is the different balance of the gun as compared to a revolver. Of course the new heavy barrel models are far easier to hold than the old light barrel guns, but even so no automatic has that muzzle-heavy feel of a revolver, and instead of having that motion-deadening hand, the automatic seems to be just

a part of the hand, which with a loose wrist joint makes it decidedly unsteady. One simply has to get used to the different balance, but to produce the stiffened wrist joint and so eliminate the quick motions that will take place in it if it is loose, a tighter grip on the gun must be used. Don't over-do it, learn just how much to squeeze the gun to give you real control. One of the sure ways to determine whether the grip is firm enough, provided the trigger is pressed properly, is a little flick of the muzzle to the left when dry snapping, or left shots when shooting. They will come as sure as fate with a light grip and an incorrect trigger control.

Now about the trigger pull. If you will stick your finger clear through the guard and have the trigger rest in the crease between the end and second joints of the finger and do a little dry snapping you will see that front sight move when the hammer is released, usually to the left, but it moves anyway, and that is exactly what should not happen. Pull the finger out of the guard until the trigger rests in the center of the end joint, and make a real effort to press straight back, and that front sight will stay perfectly still. Combine that kind of a trigger finger position and pull, with a slightly firmer grip, and you will see your scores improve without any question.

Because the automatic is different from the revolver in balance, and so has to be handled differently, I believe that it should be shot differently also, and I wish shooters would try the different manner to be suggested and see if it does not produce for them the same better results it has for me. All of our ideas on handgun technique have come down to us from the days when single-shot pistol shooting was the game. Later slow fire with a revolver became popular, and it was only natural that when fast shooting became the principal type, we still based our method on the old ideas. With a single-shot pistol we held and held trying to get an absolutely perfect alignment of the sights and bull at the very instant we produced enough pressure to release the hammer. I imagine that that method was an outgrowth of the off-hand set trigger rifle shooting but when a two-pound trigger pull is used things are quite different from the two-ounce pull of a free pistol or a set trigger rifle, and that long holding is not productive of best shooting. When a gun like an automatic with its muzzle light balance is used it is in my opinion a useless expenditure of effort, and my shooting the past summer proves that this conclusion is correct.

I personally hate to see the old careful slow fire shooting go, but times change, and with the most suitable gun for modern target shooting—the .22 automatic—I believe all shooters would do better shooting if they not only got the shot off in less than ten seconds but also if they fired at least three shots before taking the gun down. With the kind of gun we now use there just isn't any use in breath-holding, the grunting sessions we used to go through with the single-shot, etc. Only the (Continued on page 40)

COYOTE EXPERIENCES

By MILTON F. McQUEARY

(Concluded from December Issue)

Another difficult shot I made during that string was offhand at a running coyote, fired from a very awkward position. I was on skis following his tracks around a hillside in the snow, the hill sloping up steeply on my right. Suddenly the coyote came running out of a little gully in the hillside, about 130 yards away and above me and to my right. Of course I didn't have time to take off my skis, for he would be out of sight in a few seconds; and I couldn't turn my skis uphill, as they would then slide backwards. All I could do was to twist around as far as possible to the right, aiming uphill at the same time. Hitting a running coyote under these conditions is no cinch, but I made it. The coyote had gotten into some scattered berry bushes by the time I was ready to shoot, and as he ran through an opening about ten feet wide, I saw the post wobble onto the right spot. I pressed the trigger, and although the coyote had disappeared, I heard the bullet hit, and knew I had him.

On the other hand, a fellow will sometimes miss a reasonably easy shot because of carelessness. When you stop to think that a coyote is only about seven inches deep at the deepest part of his chest, on an average, so that any shot which strikes more than three and one-half inches above or below center will miss him, you can see that careless shooting won't get by. Anyone who has hunted coyotes much will tell you that they are hard to hit, and that is at least partly right. I maintain, however, that a coyote isn't so awfully hard to hit, but he sure is devilishly easy to miss! I never shoot at one until I am sure I can't get a yard closer—unless I am already within a hundred yards or so. Then when I do shoot I take the utmost pains in aiming and squeezing the trigger. I always take a rest in any way possible, and I have learned to use the slightest thing for that purpose.

The winter I shot thirty-two coyotes straight was the first winter in which I did nothing but hunt coyotes. I started about the first of November, and hunted nearly every day that wasn't too stormy, until the hides began to go bad in March. In all I shot at sixty coyotes that winter, and killed fifty-three of them. Just lacked one of killing nine out of ten. I have never done as well since, usually killing about four out of five.

The next winter I began to have trouble with my rifle not holding its zero, and missed a good many shots which were perfectly held and fired. I shot at about ninety-five coyotes that winter, and killed seventy. That was too large a percentage of misses, I figured, and since I couldn't seem to find the trouble, I decided to buy a new outfit. The old .250 didn't owe me anything anyway, as I had killed one hundred and fifty-six coyotes with it, besides a few bobcats, foxes, deer, etc.

I had been reading all the dope I could get on the new

Winchester .220 Swift, which most everybody agreed was an excellent and accurate pest and vermin rifle. However, I was a bit leery of such a light bullet, even at very high velocity, until a neighbor bought one of these rifles for target shooting. After shooting it, and seeing the effect of that small bullet out around 300 yards, I decided it would do very nicely for coyotes. The deadly accuracy and flat trajectory looked good, since it would enable me to set my scope for 300 yards, holding at the bottom of a coyote's belly at mid ranges, and up to the top of his back at 350 or 360 yards.

Flat trajectory and fine accuracy are very necessary for coyote hunting. It requires a very accurate rifle to group on a coyote's ribs at 300 yards, while flat trajectory enables you to make hits at long ranges even when you have failed to estimate the distance correctly. Even the highest velocity bullets are dropping at the rate of nearly an inch every ten yards, out around the 300-yard mark, so you haven't much leeway in your distance-guessing. If you misjudge the distance by 30 or 40 yards when your coyote is around 300 yards away (and that is very easy to do), your group center will be off the coyote, or so nearly off that a large percentage of the shots will miss him.

One of the prime requisites of a successful coyote hunter is the ability to estimate distance accurately, and do it in a hurry! I always pace the distance at which I hit or miss a coyote, if possible, to see how it checks with my estimate. Most hunters overestimate distance pretty badly. I find that as a rule the distances which are called 300 yards are actually only around 200, while from 275 to 325 yards is usually called a quarter of a mile. You will often hear fellows tell of killing deer or coyotes 600, 700, or even 800 yards away. As a matter of fact, these long shots probably are only from one-half to two-thirds as far as they are called.

As an example, my friend Pom Ainsley and I were driving beside a meadow last winter, when we caught up with a car in the road. One of the men in the car got out and showed us a coyote back in the field, which we had failed to see because our windows were all frosted up. The other fellows didn't have a gun, but we were coming home from coyote hunting, so of course we had ours.

It was late and the light was getting poor, but Pom took his rifle (a model .70 Winchester .270 equipped with Noske 4X scope) and lay down to have a try at the coyote, which had seen us stop and was heading toward the willows. It was a very long shot, and Pom missed the first try. The bullet struck in the willows beyond the coyote so that he was afraid to run into them, and he ran beside the willows a little way and then stopped. Again Pom missed him, and the performance was repeated. Next time, however, when the old .270 barked the coyote went

down. The fellow who had shown us the coyote was wildly enthusiastic. "That's the greatest shooting I ever saw!" he exclaimed. "That shot was well over 500 yards!" Pom stepped the distance as he went to get the coyote, and it was just 384 yards. Actually a very long shot at a coyote, but *not* 500 yards.

The longest distance at which I ever killed a coyote measured 420 yards—but I'm getting off the trail. As I said, I had decided to get a .220 Swift, and since I figured that the most accurate rifle obtainable was none too good, I ordered the M .70 Winchester target model with medium heavy barrel. I ordered the rifle early in July, but didn't get it until just two days before the big-game season. I had ordered a Noske 4X scope for this rifle, and getting both the rifle and scope at the sporting goods store, I took them out to Tilden's and had him attach the scope to the rifle with his lowest mount. Then I beat it for home (I live about one hundred miles west of Denver, up in the mountains). The next day I sighted-in the new rifle for 300 yards, using the 48-grain factory load. The following morning was opening day of the hunting season, and daylight found me well up in the hills, ready to try out the .220 on an elk. Of course I had read in the sporting magazines a lot of arguments pro and con concerning the ability of the Swift to kill big game. I figured I wouldn't shoot at anything unless I had a good broadside shot at a reasonable distance.

I was sitting at one end of a long, narrow opening in the timber, about noon, eating my lunch and keeping an eye on things. Suddenly an elk appeared in the opening. It was a cow, and as she started across the park she was followed by two more. Then a bull showed up, and I dropped my sandwich and grabbed my gun. I waited 'til the bull was about in the middle of the park and 175 yards away, then as he walked slowly along I held low behind his shoulder, and fired. At the shot he wheeled, and, followed by the cows, started back the way they had come. They had only a few

yards to go to get out of sight, so I pumped in another shell and shot again, just as the bull disappeared. "Now I've done it!" I thought. "I've put two bullets into that elk, and there are so many tracks around that I won't be able to follow him fifty yards". I hurried up to the spot where the elk was when I shot. There was no blood, and I couldn't tell anything about tracks. Then I started out the way the elk had gone, and there lay the bull, not over thirty-five yards from where I had shot him. When I dressed him out I found that the first bullet had blown his heart all to pieces. The second shot had hit a bit farther back, as he ran, and had torn up the liver. It had killed him as quickly as a .300 magnum would have done. I found that the rifle performed very well on deer, too. But to get back to coyotes—

It seemed to me that the .220 Swift killed coyotes just as quickly as the .250, without tearing up the hides quite as badly. However, the accuracy of this rifle wasn't as good as I had expected. I couldn't keep ten shots in the ten-ring on the standard small bore target at 100 yards, while at 300 yards it took an eight-inch circle to hold them all. However, I had big hopes of it's doing better after it was broken in, so I went on hunting coyotes.

The hunting was comparatively poor again that winter, and I killed only forty-nine coyotes, missing about seventeen. Not so good, but the misses weren't all my fault, because, heavy as the barrel was, whenever there was a spell of wet weather the inside of the forearm would swell and raise the point of impact. Coyotes being so small, if your point of impact is raised one minute of angle you will overshoot about half of them at around 300 yards. Well, I finally sandpapered out the inside of the forearm until the barrel didn't touch anywhere. This didn't help the accuracy any, but it did stop the sudden shifting of point of impact due to changes in weather.

I figured that the only way to increase the accuracy would be to shoot hand-loaded ammunition. I had no place to set up a reloading outfit, so I saved up a hundred empty cases, and sent them to J. B. Smith of Middlebury, Vt., and had them reloaded



Pom (left) and writer with the lion skin. Below is another glimpse of our coyote country



with the 50-grain 8-S bullet. This was a very good coyote load at about 4000 f.-s. velocity, killing cleanly, and damaging the hides even less than the factory load. As for accuracy, these loads shot much better in my rifle. The first ten shots I fired at a target at 100 yards all struck the X-ring, the group measuring slightly over an inch on centers. At 300 yards a five-shot group went into a three-inch circle. Of course it wouldn't average that good all the time, but it grouped better than factory pills.

I had started hunting that winter with factory ammunition, and finished the season with these custom loads. I killed sixty-two coyotes out of seventy-eight shot at, or just under 80%. The next winter I started out with Smith's custom loads, and used them straight through. I shot at ninety coyotes and killed seventy-two of them.

Four coyotes is the most I have ever killed in one day, and three is the most I've killed at one sitting. I never managed, after killing four coyotes, to get a shot at a fifth one, but I did have a chance to kill four of them at one sitting once. It was two years ago last fall. I went over into North Park to see if I could pot a coyote or two. I camped beside a large meadow, and was kept awake most of the night by coyotes howling, so I was up before daylight, and on a hill where I could overlook the meadow.

As soon as the light was strong enough, I located four coyotes out in the field beyond a strip of willows. I slipped down off the hill, and started out through the willows. The creek was dammed up by the beavers, and water was all over in there. It had been just cold enough during the night to freeze a little shield of ice over the still places and beaver ponds, but the ice was not thick enough to walk on. However, by crossing the main stream on a beaver dam, and wading through the icy water of the shallower ponds, I made it to the edge of the willows, just as the four coyotes were passing by out in the meadow on their way to the hills.

I was in a low place and couldn't lie down to shoot, or even sit down. The best shooting position I could get into was kneeling beside a heavy bush and resting my left hand against the stems. Even then I had to shoot through a fringe of grass growing on a knoll in front of me. But I estimated the first coyote to be about 240 yards away, and cut loose at him. At the impact of the bullet, he went down. The three others loped off a little way, and stopped. I whipped in another shell and fired as quickly as I could take aim, and another coyote went down. Again, the two remaining coyotes ran a short distance, and stopped. I shot again and downed the third one. The last one then ran a little further, and stopped again. Now if I had stopped and looked him over, and estimated the distance carefully before firing, I might have hit him. But I knew he wouldn't stand still very long, and since he was on the same level as I was, he didn't appear to be much further off than the last one; so I held the same as I had on the last two, and shot. He took off then, and left those parts completely.

Then I got up and paced the distance. The first coyote was 228 yards, the second 270, the third 315, and as nearly as I could tell, the fourth one had been about 360 yards away when I shot at him. Since my rifle was sighted-in for 300 yards, I should have held at the top of his back. But I held in the center of him, and so

under shot him. Coyotes aren't plentiful enough any more to get many chances like that, so I probably will never kill four at one sitting. Another thing: coyotes are getting so wild that even though you get up on a bunch of them, you can't get very many good shots; because if they keep running they will get out of range in a hurry. Only when they run a few rods and stop, after every shot, can you get more than one or two good shots at one session.

Now as to methods of hunting. I use a pair of nine power Bausch & Lomb binoculars, and I figure that ordinarily I can see a coyote just a little further with these glasses than he can see me. Coyotes, when they are on the alert, will see you the quickest of anything I know of, with the possible exception of eagles. It is easier to stalk an antelope than a coyote, in a given type of country, while a deer can be approached dead easy, using coyote stalking methods.

During the fall, before the snow gets deep enough for skiing, hunting must be done on foot. A man on horseback would be far too easy for a coyote to see. The best system is to get up on a hill or other high ground early in the morning, sit down, and with the binoculars scan every inch of ground in sight. If a coyote is seen moving around it is best to watch him for a while and determine if possible just what he is up to. (Usually pretty difficult, since the coyote himself often doesn't know where he is going, but just wanders around wherever the mood takes him, keeping an eye peeled for trouble, and ever ready to duck out of sight on an instant's notice.) If you can figure out what he is going to do, you must plan your stalk so as to keep out of sight of him, while occasionally peeking over a ridge top to see what he is doing. If you let him out of your sight for too long you are liable to lose track of him and never locate him again. Once you see a coyote, it is important to keep him in sight as much as possible without letting him see you. Perhaps the most important single thing in coyote hunting is to *see the coyote before he sees you*. If he sees you first your chances of getting a shot at him are slim indeed, unless you are pretty close to him at the time. Even then you will probably have to shoot at him running, making your chances of a hit considerably poorer.

Last winter, of standing coyotes I killed sixty-seven and missed nine. Of running coyotes I killed five and missed nine. Quite a difference.

After the snow gets deep enough for skiing, the procedure is much the same, except that tracks can often be seen with the glasses for a considerable distance, thereby helping to locate a coyote. Of course it is also easier to see one against the white background, when the rocks and sagebrush are covered up. Once in a great while, when the snow is deep, the conditions will be such that a man on skis can travel as fast as, or a little bit faster than a coyote, and can run him down in a mile or two of furious pursuit. Pom Ainsley jumped one a year ago last winter when the snow was just right, so that although the coyote could walk on the crust, when he tried to run he broke through and went nearly out of sight. The coyote went uphill at first, and Pom was just able to keep close enough to make him try to run. After about a mile and a half of this the coyote turned down hill, and

Pom soon caught up with him then. The coyote was trying to climb a small ridge when Pom came up, but was unable to do anything except jump feebly up and down in the same spot. He was completely exhausted, and a .270 bullet soon put him out of his misery.

About two weeks later Pom and I were running two coyotes like that, and had them pretty well played out, when they came to a well packed trail. We soon discovered that the trail was being used by a mountain lion, and we forgot all about the coyotes. The lion trail was fresh, and since there was a seventy-five dollar bounty on lions, we lit out after him. The snow was too soft to hold up so big an animal as a full-grown lion, and it looked as if, could we but run him away from the deer and elk trails he was following, we could soon overtake him and shoot him.

It was sundown when we struck his trail, and before we could catch up with him it was dark. The next day, however, we went back, and after an exciting chase, cornered the lion under a large spruce tree, where I killed him at a distance of about fifteen feet. My scope had gotten plastered up on both lenses with snow, so that when I went to aim at the lion (I could see only his face) I was unable to do so. So I just pointed the gun at him by sighting along the barrel, and shot. The bullet hit him under the right eye. I was using the .220 Swift, and that little bullet sure cracked his skull. He never knew what hit him.

That was the biggest day's wages I ever made. The most I have made in one day hunting coyotes is thirty-two dollars. That was three years ago, the first time I killed four in one day, and they brought eight dollars apiece. I figure that my returns on all the coyotes I have killed would average about five dollars apiece. There being no bounty in Colorado, all they will bring is their value as fur. As the expense of hunting them runs fairly high, the net profit is only about three dollars per hide. I have never averaged any better than one coyote every two days, so you see it isn't a get-rich-quick scheme. But I would rather hunt coyotes for a dollar and a half a day than shovel hay and milk cows for that same amount.

As I said before, I shot seventy-two coyotes this last season. Pom Ainsley was hunting with me, and he shot fifty-five, which totals one hundred and twenty-seven. Quite a pile of coyotes to kill with a rifle! That number of kills represents a lot of shooting and a lot more walking, and I figure we walked over two thousand miles for that bunch of coyote hides.

I have told about the longest and shortest shots I have made, so now for the most unusual. I had walked out on a large, steep mountainside, covered with sagebrush with a few patches of quaking aspens and berry bushes scattered here and there. Upon scanning the mountainside I saw nine coyotes, four in one bunch and five in another. They were too far away for a shot, and there was no way to get closer without being seen. I was in a patch of berry bushes where they couldn't see me, so I just sat and watched them. They chased one another around for a while, and then the bunch of four went back around the mountain out of sight. The five others were fooling around in a patch of quakers, and presently

I lost track of all of them except one. This one came out on my side of the trees, and lay down. There was a ridge running down the mountain between the coyote and me, within good shooting distance of him, and I knew if I could make it to that ridge top I would have a good chance to kill him. So I watched him until he laid his head down and went to sleep; then I started across the open toward the ridge. I'd stop every few steps and look at him with the binoculars to make sure he hadn't waked up and discovered me. But he stayed asleep until I got out of sight of him behind the ridge. Then I hurried across and climbed up to the top.

The coyote was still lying there about 240 yards away, but as I was crawling up into shooting position I saw the four other coyotes coming out of the trees. They ran up and piled onto the one that was snoozing so peacefully, and there was a general free-for-all fight. When they quit milling around, there were two of them standing side by side, broadside to me, one facing north, the other south. I saw that I might kill both of them with one shot if I could shoot before they moved. I aimed and started squeezing the trigger, but before I could get the shot off the near coyote turned around, and again stood sidewise, sniffing noses with the other one. I held about the middle of his body, and shot. Down he went and I saw all the others start out of there except the second one I had hoped to hit. He stood as if too astonished to move, while the first one jumped up and staggered down the hill into the trees. I saw that the first one was hard hit, so I looked back at the second one. He was still walking around as if unhurt, and I was about to shoot at him when he suddenly fell. I could hardly believe I had killed them both, but when I got over there, sure enough, there they lay, two coyotes killed with a single bullet! I had always wanted to get two coyotes lined up like that, but I figured up that I had killed three hundred and sixty-three of them before I got the chance.

The bullet struck the first coyote in the center of his ribs and came out just behind the shoulder; then it hit the second one behind the shoulder, making a hole about two inches across in the hide. Only a small piece of lead, about the size of a No. 6 shot, got through the second coyote, and it was stopped just under the hide.

The next day I went back into the same country and shot four more coyotes out of that pack, and after that the hunting was sort of poor around there. In fact that just about ended the hunting for that year.

"ON THE RECEIVING END"

There's one thing about high-power rifles that is not in keeping with one's early fancies: the jacketed bullets say "Whang" when they strike—just a thud with no ring to it. Only the .22 caliber lead bullets whine. Sounds musical. On the old Fort Logan rifle range the bullets were free to do as they pleased after the plane of the targets had been passed. Once I went down to the mid-range targets after a skirmish run, then turned off, intending to circle back to the firing line. Just then firing was resumed—.45-70-500 loads. One of those slugs sang, another whined, a third whizzed.—PERRY D. FRAZER.

A CHANCE TO WIN

HOW WOULD YOU LIKE to put on the gloves with Joe Louis for about ten rounds—or perhaps a fight to the finish—with the full understanding that he would pull no punches? You'd probably pick out a nice soft hospital bed before the first blow was struck.

Or would you rather play a round of golf with Sammy Snead at ten dollars a hole—shooting from scratch? It wouldn't be a money-making scheme for you!

But if you're in the mood to make money, perhaps you'd like to match Crossroads College and Minnesota on the football field next year so you could bet a hundred dollars, even money, against the Gophers. Or perhaps you picked the Redskins to beat the Chicago Bears in the professional football play-off this year. Fine gambles!

Those are matches that every casual reader of the sports-page would deride because they were so uneven as to eliminate all competitive interest. But the same person who would scoff at the mere thought of attempting to win a tennis match from Don Budge, or a mile race from Glenn Cunningham, is willing to argue day and night that handicapping is not meant for the shooting game—we should all be willing to compete on even terms with Bill Woodring or Al Hemming or the hot Marine team.

Every sport which successfully holds the interest of competitors as well as the non-participating public makes use of some form of classification or handicapping. The most important man around a golf club is the assistant pro or caddy master who makes up matches according to the ability of the people on the first tee, and horse racing wouldn't be the "sport of kings" if the track handicapper wasn't there to determine carrying weights, and other racing experts were not around to figure out the chances each nag has of finishing one, two or three. Baseball uses a classification system with major and minor leagues to accommodate players of varying ability while boxers are classed according to weight and again by experience. But in the target game classification was not admitted until a few years ago and handicapping is still decidedly in disfavor or distrust among the majority of established shooters.

This feeling may be attributed, at least in part, to a general failure to realize that the object of a handicapping system is to increase the competitive interest in a match by equalizing the chances of all contestants to win. We are so accustomed to seeing matches awarded to the highest scores fired that we refuse to give a second-rate shooter the credit he deserves for turning in an abnormal score—shooting over his head, if you prefer.

There is also apparent a lack of understanding of the essential differences between "handicapping" and "classification". This was apparent in the early application of the N. R. A. classification system to outdoor matches in some parts of the country and in the current antipathy toward handicapping by shooters who now recognize classification as an accomplished improvement to outdoor competition. There is room for classified matches, handicap matches and open matches in this sport. Each type of match serves a different purpose.

We have all heard the comment, "You don't deserve to win unless you can beat everyone there". That is true, but only to a limited extent. Every championship, national, regional, state or local, should be determined in open competition with every competitor entering from scratch. Such an important match and title should logically be awarded to the person who demonstrates an ability to fire the highest scores and he deserves much credit for doing so. This desire to recognize and publicize outstanding ability has tended to emphasize the thrills of winning rather than the thrills of competing. Most of these competitors know that their chances of winning are exceedingly slim, even before the first warning shot is fired, but they will shoot, just for the fun of shooting. Their interest in a match can be greatly increased if some means can be provided to open up the thrills of winning to all contestants, even if this is done in a modified manner.

That can be accomplished by "classification" or by "handicapping". Under the classification system, all the competitors are divided into a number of "classes" according to their ability as demonstrated by past performance. Prizes are awarded in each class. The top, or "championship", prizes are open to all contestants while the prizes in the lower classes are restricted to shooters who are not yet of championship caliber. A classification system must be sufficiently broad to allow for normal fluctuation in scores, but still fine enough to give even the low-average man in each class an opportunity to win. The N. R. A. classification system has proved to be generally satisfactory in this respect and may be considered as a success in its application to regional and state-wide tournaments whose sponsors must anticipate attendance by visiting shooters from other localities.

For strictly local competition conducted regularly among a selected group of shooters, a national classification system is inadequate and some other means of stimulating competition among the run-of-the-mill shooters must be devised. One solution is a modified class system, taking advantage of the more frequent computations of averages made possible by the ready accessibility of all scores to the league or club secretary. Reclassification may thus be accomplished monthly or weekly to keep up with improved scores caused by intelligent practice or new and better equipment.

But in many cases a far more interesting type of competition may be provided by utilizing these same averages as the basis for a handicap, rather than a class, system. With handicapping, every match is open to all comers, except that "an artificial advantage is given to those who are supposedly inferior, as a means of equalizing the chances of winning". The chief difficulties are the preparation of individual averages and the working out of a suitable formula for determining the actual amount of the handicap to be awarded each individual.

It is obvious that a handicap match has no place in nationwide or regional competition. Complete and accurate averages of all competitors are essential. They must be current and their method of computation must

be uniform for all competitors. Such conditions exist only in closely organized clubs or leagues composed of shooters who fire against each other regularly under identical, or similar, conditions. A handicapping system is ideal for such local competitions, if some hard-working, mathematically-minded individual is willing to undertake the thankless task of retaining the records. This job has been somewhat simplified by the publication of the N. R. A. Gallery League Handbook which contains a number of tabular pages for listing the match-by-match record of individuals or teams, and for working out the current averages with a minimum of effort.

Once these figures are available the problem arises of how to use them. Shooting handicaps have been going through a period of growing pains made more painful by a lack of intelligent planning and testing of the ideas which were advanced. It now appears that this period is nearing its end and a suitable handicap system is about to take its final fully-developed form.

The first attempts at allotting handicaps to shooters followed the most obvious and simple pattern: if John Doe was firing a match with Richard Roe whose average score was 20 points less than Johnnie's, John might condescend to "spot" Dick ten points so he'd only have to jump his average ten points, instead of twenty, in order to tie up the match. And from such crude beginnings an idea was born!

The first and most apparent defect in this system was discouraging to the promoters of handicap matches. Whenever a large handicap was allotted, there was a strong possibility that the gross score would be greater than "possible". And in that case, of course, the poor high average shooter didn't have a chance—you just can't get more than 400 over the Dewar Course or 300 over the National Match Course, except with the aid of a handicap.

And so the added handicap was dropped in favor of a "dropped point" system. This system, which was quite completely described by Robert Leavitt in *THE AMERICAN RIFLEMAN* (October, 1939, issue) takes into account the peculiar property of shooting scores which makes the measure of comparative progress much smaller as the size of the score grows. According to Leavitt, an 88-average shooter deserves as much praise for firing a 94 as a 94 average shooter merits for firing 97. In either case the shooter has succeeded in eating away half of the difference between his score and the possible.

Other clubs were experimenting with the "dropped point" system, and with very encouraging success. They found that shooters who had long since abandoned all hope of being a "winner" could now find renewed interest and encouragement in this method of awarding prizes, not on scores actually fired, but on the percentage of improvement. Unfortunately, there were many of these newly-made winners who didn't understand why they won, but there were just as many more who couldn't understand their own losses. There are still many shooters who prefer to win their matches on the firing line with a rifle or a pistol, rather than later behind the line, with a slide rule. Mathematical formulas are still a form of black magic to most of us. Many different ideas were advanced for simplifying the calculations, one of the

most practical being a swinging thread graph used by the Stockton, Calif., Pistol Club, but these all worked counter to the established practice of deciding matches on scores—they decided matches on percentage of improvement. It just didn't quite make sense to the average shooter!

Among the organizations experimenting with the dropped point system was the St. Louis Metropolitan Rifle League, a group which was large enough to have accurate averages for nearly 150 shooters. They were primarily interested in a means of precalculating an equitable handicap to be applied to the actual score fired by each shooter. They did this by using a sliding scale of percentages in computing the handicaps.

Average Score	Handicap
190 - 200	none
180 - 190	50%
170 - 180	60%
160 - 170	70%
below 160	75%

This is a four-position league, possible score—200, and 190 was adopted as "par" with all handicaps based on the difference between the average and par. This gave a 184 average man a handicap of 3 (50% of 6), a 174 average man a handicap of 9.6 (60% of 16), etc. The system was used at several city-wide tournaments during the last gallery season and received the general approval of good and mediocre shooters. Of course the top 10%, the Joe Louises of the target game, are opposed to any handicapping system because they'd prefer to "take on all comers on even terms". But even they agreed that this method did not unduly penalize them for being good shots.

The next step in the evolution of handicapping came from the fertile brain of V. J. Tiefenbrunn who started life as the junior rifle champ of St. Louis, then stayed with the .30 caliber game long enough to become the Missouri State champion before he transferred to the outdoor small bore game where he gained National prominence. The 1940 rankings show him among the top 50 pistol shooters. "Tief" realized that the mechanics of operating a handicap system could be greatly simplified by the preparation of tables showing the final adjusted score, handicap included. The preparation of a complete table in advance would permit a more uniform graduation of handicap percentages and would also allow the incorporation of the Leavitt system of paying off on rate of improvement. The job required many hours of labor but the St. Louis league now has a handy printed tabulation of adjusted scores to be used during the current season. The book was printed by the Western Cartridge Company, and is available to club secretaries or handicapping officers without charge from them or the Winchester Repeating Arms Co. This tabulation was made primarily for the 200 possible, four-position course of fire used in St. Louis. It is equally applicable to all other 20 shot courses and may be used for ten or forty shot events by multiplying or dividing by two.

In this case, careful study was given to the arbitrary selection of the upper and lower limits of the handicap table. An average of 192 is (Continued on page 38)

THE GUNS OF THE YEAR... THE MODEL 37 AND THE 513T

Biggest news of 1940 in the smallbore game was the introduction of two target guns by Remington—the new Model 37 Rangemaster, the last word in match rifles, and the Model 513T Matchmaster, a gun selling for less than half the price of its big brother, the Model 37, yet which has many of its fine features. These guns have *proved* themselves during 1940 by an amazing record of wins and high scores. Each is supreme in its class.

Finest match rifle you can buy—the new M 37

The new tailored stock on the Model 37, plus the sensational "Miracle" trigger which ends backlash, have been the chief topic of conversation at every big shoot. But these advantages, great as they are, are not by any means the only advantages of the Model 37.

The barrel is rifled for unsurpassed accuracy. Its double counter-sunk at the muzzle to protect the rifling. The action is smooth as velvet. The combination of special Remington rear sight and Redfield front sight has won more iron sight matches than you can shake a stick at (although the rifle is also available with any standard sights or without sights). The sighting plane on the new Model 37 is exactly the same whether iron sights or scope sights are used. The rifle comes to you fully equipped—ready to shoot!

A high quality rifle at a moderate price—the new M 513T



On the market only a few months, the Model 513T Matchmaster has already won a place close to the target shooter's heart. This gun was designed to meet the need for a high quality target rifle selling at a moderate price. Thousands of shooters in schools, colleges, summer camps, new industrial rifle clubs and other organizations have been clamoring for a rifle like the Model 513T. And many outstanding smallbore shooters have tried the new rifle and found it ideal for four position shooting, especially in the offhand position. It has a heavy match barrel, target stock, first rate micrometer sights, speed action, adjustable front sling swivel, and non-slip butt plate. You've really got to see this rifle to appreciate it!

POSSIBLES and IMPOSSIBLES

by FRANK J. KAHR



As we approach the end of the year we naturally feel like taking stock of what, if anything, we have accomplished during the past year. What mistakes we have made, or acts of omission or commission, if any. Then our thoughts quite naturally turn to the coming year and we firmly resolve that we will do better next year and not make so many mistakes—not that we have made too many, but we always make some, and if there is anybody out there who reads these lines and who can truthfully say that he got through the year of 1940 without having made a mistake, we would like to know such a man.

Now that brings us to another thought which, of course, is to wish all of our many friends out there in the big open spaces a GREAT BIG HAPPY AND PROSPEROUS NEW YEAR, and to our friends, old and new whom we met on our travels around the country this year we send a special message, that is, to reiterate our promises made in good faith at the time that we would come back again, and that is what we are going to do. We are going to try to cover even more ground next year than we did last year.

Of course we will get to St. Pete for the Mid-Winter Shoot and we will take in the Atlanta Shoot, then the big 100-yard event at the Chicago University in April. By that time we will be well on our way again—perpetuating we call it, pard—and if there is any better job than travelling these United States visiting rifle clubs and rifle shoots everywhere, meeting old and new friends, taking pictures of old and new places we visit, then we haven't caught up with that job.

We couldn't let December go out without recording another mistake: in this column last month we stated that we were giving a brassard for 10-X possibles at 50 yards. What we started out to say was that we were giving brassards for possibles at 50 and 100 yards over the Dewar Course which gives you a total possible of 400, and then we give a brassard for a 10-X possible at 100 yards. To those friends whom we have told that we do not give brassards for possibles at 50 yards this explanation will straighten things out. To those who send in targets for a 10-X brassard for a score made at 50 yards we will make good, but not after this correction has time to circulate, so we will set a deadline of January 30, 1941.

You fellows out there in the warm country where you can shoot small bore all the year round do not know how well off you are until you come east and spend a winter here in Connecticut. We get every kind of weather there is: snow, ice, sleet, rain, slush, winds, fog, and if we have forgotten anything, we get that too. So we have to hole up for the winter and do our shooting indoors.

We wait patiently for St. Pete, but in the meantime we have a chance to test our ammunition and guns, and we get the lowdown on what our new

QUIZ

FOR RIFLEMEN

● How much do you know about your favorite sport—shooting? Try these questions and see! (Keep your eyes off the answers until you've answered—or missed—all the questions.)

1. Can you shoot a prone match lying on your back instead of your stomach?
2. In the earliest turkey shoots in this country, did the contestants fire from prone or offhand positions?
3. Did early American target rifles have a windage adjustment on the rear sight?
4. How were gun barrels bored in the early 19th century?
5. What makes Kleanbore ammunition non-corrosive and non-erose? Something on the bullet, something in the powder, or something in the priming?

● Here are the answers for those who haven't peeked:

1. No—although such a position was frequently used a generation ago.
2. He could fire in any position—usually prone with the barrel of his gun resting on a log.
3. No. The earliest standard American target rifle, the Remington Creedmore (.44-90 caliber) had the wind-gauge on the front sight. Optional sights included were rear sights with a spirit level to prevent cant.
4. They were not bored. A long metal bar was hammered around a rod and the joints welded. When the rod was taken out, a rough barrel was formed, ready for finishing.
5. The priming, which leaves a uniform protective coating on the inside of the barrel.

ammunition is going to do for you fellows out there during the coming year. Next month we hope to have a lot of groups to show you, actual groups made at 100 yards indoors from machine rest, which is the regular testing routine at this plant.

The other night we attended a banquet of a rifle club in New York State not far from West Point (the censor just left) and as usual a good time was had by all. We showed some of our color moving pictures which we took last year in all parts of the country and these were much enjoyed.

In this particular club one of the boys is known as the "Crossfire Champion." He is also noted for his eccentricities in the accumulation of gadgets and whatnots, also an obsession for stocks of grotesque and curious design. His forte is to do the opposite and so his present stock which he is now shooting is inverted so to speak. The heel is where the toe ordinarily is, and vice-versa. How he ever gets into it or gets low enough to see through the sights will forever remain a mystery.

Make your 1941 resolutions now and don't forget—Regular .22 long rifle Kleanbore or .22 long rifle New and Improved Kleanbore for indoor shooting of all kinds. For the outdoor season—Palma Kleanbore or Target master, Remington's two ace cartridges for either rifle or pistol—and there you are.

"RANGEMASTER," "MATCHMASTER," "P"

THERE'S ONE IN EVERY CLUB... THE TRADER



IN 1941's BIG SHOOTS USE THE AMMUNITION THAT PERFORMED SO WELL IN 1940 . . . "PALMA KLEANBORE" AND "TARGETMASTER"



CORAL GABLES, FLORIDA, where the Flamingo Pistol Tournament will be held again. Come early so you can take in the National Mid-Winter Pistol Tournament at Tampa as well. You shouldn't have much trouble persuading the wife to come along to this match. Bring plenty of Targetmaster ammunition—the competition is tough!

Let us remind you that Targetmaster pistol and rifle ammunition is *made especially* for match shooting. The special fast burning powder gives more complete combustion, hence less muzzle flash. As for accuracy . . . it's tops!

Step up your average with Remington match ammunition and the New Model 37

Well, another new year is here, and members of the smallbore clan will soon be pouring over last year's averages. They'll be making resolutions to hold 'em tighter and squeeze 'em finer in 1941 than they did in 1940—trying to move from an Expert Classification to Master, or to climb up to the magic circle of the top twenty in the national ranking.

Biggest item on the program for attaining these happy states is practice. Practice counts far more than anything else. But equipment can also help. Every shooter should test and check his equipment before he goes on the firing line in any match. His confidence in his rifle and ammunition should be complete. That confidence alone is worth points!

So why not start the new year by re-checking your equipment? Determine not just whether your rifle groups as closely as it did when it was new—but if it groups as tightly—if its stock fits as well—if its trigger pull is as smooth and sweet—as the newest and best of the rifles your competitors will be shooting.

Check your ammunition, too, and make sure that you've got the kind that works best in your gun, come hot weather or cold, wet days or dry, high winds or calm.

Don't forget to check yourself.

Past performance counts!

If you attended any of the big events last year—the Mid-Winter shoot at St. Petersburg—the regional championships—the big indoor events—Camp Perry—you must have heard a lot of talk about the new Model 37 and Palma Kleanbore and Targetmaster ammunition. For 1940 was a year of triumph for all three.

Try them now for yourself—before big matches come rolling around again! Make sure your gun and your ammunition are as good as the best in the line. Then start punching the center out of that X-ring!

Indoor Shooters Prepare For Biggest Season Ever!

There's some consolation for the poor lads who can't get down South for the winter outdoor season. They won't get sunburnt, and they can still get in plenty of shoot!

For those who like their competition hot, there are the big indoor events like the New York Metropolitan, the Buffalo Metro, the Connecticut Team Shoot which always pulls a record entry, and, a bit later, the University of Chicago shoot. Then there are scores of hot gallery matches and thousands of league shoots. Incidentally—here's a hint on gallery ammunition. Regular velocity Kleanbore has been top choice of gallery shooters since it was introduced. It has to be good to win that kind of popularity.

"Kleanbore" ammunition has an extremely high degree of quality of uniformity, which is the true secret of accuracy.



ST. PETERSBURG, FLORIDA, scene of the National Mid-Winter Smallbore Championships—the biggest outdoor shoot of the winter season. Don't miss it—the setting is beautiful, the climate ideal, the shooting—hot! This is really the spot for winter vacationers. You can stop off at Atlanta, too, for the big shoot held just before St. Pete.

ACCURACY VERSUS VOLUME

(Continued from page 10)

were to fall behind the standards of battlefield marksmanship set in previous wars. Some of the French were to remark that the Marines made a fetish of rifle marksmanship. It seems to have been a profitable God to worship. Such caustic comment hardly seems reasonable from an Army that had believed that gallery rifle training at 40 yards, and a bright blue woolen coat were enough to overcome machine guns.

The present war, World War II, has afforded two valid examples of the value of good rifle marksmanship.

The first example is that of the recently concluded Russ-Finnish War. It is true that the war ended with a disastrous separate peace for the Finns. But, the only thing that saved them from total defeat was the high state of training of the Finnish Army and Territorials. This training had as its very foundation a thorough training in rifle marksmanship in all its phases.

Under the Tsars the Finns had been forbidden to possess arms. As a consequence in the Finnish War of Independence they found themselves under a handicap due to their lack of training with the rifle. Having gained their independence they resolved to never again be placed in such a disadvantageous position. This resolution resulted in a training only matched by the Swiss, and the Northern nations, the Norse, the Swedes, and the Letts. All of these small nations endeavor to replace lack of numbers by thorough training.

The major part of the Finnish forces was made up of the Territorials, corresponding to our National Guard. Almost every able-bodied Finn took an active part in this organization, both before and after his short period of conscripted service in the regular army.

On joining the Territorials the Finn was classed as a learner. Before he could advance to Class One, he had to qualify with the rifle. Before advancing to Class Two he had to complete a course in tactics of small units and again qualify with the rifle. To advance to Class Three he had to demonstrate his ability with the rifle as a member of a small unit in a field combat problem and also demonstrate his ability to handle such units in such problems. To graduate to Class Four he had to again complete a course in tactics and to qualify both as a shooter and instructor with the rifle. It need hardly be mentioned that the members of the regular Army received an even more thorough training.

As further proof of the training of the Finns with the rifle the reports of the Territorials General Staff for 1936 may be cited. According to this interesting document, in 1934, over 14,500 rifle matches were held all over the country, with over 300,000 selected competitors. In the big target match in the Spring there were 14,000 to 15,000 competitors in both range and field matches. The report states that there is hardly a village without its own rifle range and gunsmith. Matches are held throughout the year regardless of weather.

The Russians, on the contrary had little interest in training for accurate marksmanship, relying, as in the past, on an overwhelming weight of numbers in men, artillery and aircraft. When the Finns' ammunition

supply began to run out, the Russians began to succeed, but not before the Finns had presented what should be conclusive evidence of the value of accurate marksmanship. The Finns, woefully inferior in numbers of men, guns and aircraft, received an estimated 30,000 casualties, while they inflicted over 250,000 casualties.

The second example of the value of rifle marksmanship is the German conquest of Poland. This campaign is a fine example of the value of thorough training based on the realities of the battlefield.

Following the Versailles Treaty the Germans had plenty of time to analyze the lessons taught by World War I and they applied them both in the training of the limited army of 100,000 allowed them by the treaty and in the conscripted masses they raised after Hitler's accession to power.

As a result of their study the Germans have armed every man of their army with a rifle, including the men in the artillery units and in the ground troops of the air force. There are a few people who are not so armed, such as communication and light mortar personnel who are loaded down with portable radios or parts of the mortar assembly. Otherwise, all troops are armed with a rifle.

Further, all troops are given thorough training with a rifle. Every garrison has a rifle range nearby which is used the year around for range work. They carry the training to its full completion with numerous field firing problems but they continually return to the training in individual marksmanship. Some units carried out training schedules that included two days a week devoted to marksmanship.

The amount of close order drill has been reduced tremendously. This is done for two reasons. First, in order to gain time for the intensified training of the individual, designed to develop his individual intelligence, initiative and self confidence. And second, since they believe that the necessary military discipline is acquired by all the various exacting drills with weapons, in combat formations, gas discipline, use of terrain and camouflage.

The value of this kind of training, the training that raises the efficiency of the army as a whole, by its emphasis on the efficient training of the individual, was amply demonstrated in the Polish campaign. It should be noted that the emphasis in training was on the use of the individual's weapon, the tool of his trade, and that all troops were armed with the rifle, either as primary or secondary weapons.

Thus, at long last, we reach the conclusion that history proves the theory correct. Accuracy with the rifle is of more value on the battlefield than volume of fire.

Since both theory and practice prove that accuracy of rifle fire is more effective than inaccurate volume of fire, the second argument that there will not be sufficient time available to teach raw recruits to shoot accurately does not seem to be very logical. For the importance of accurate shooting would seem to warrant the conclusion that sufficient time for training must be allotted.

However, even the argument itself is based on false premises, the basis being the fact that in World War I men were sent over-seas without having fired a rifle after four months' training at home. Therefore it is said that

the last war proved that even four months' training was not sufficient time in which to give thorough marksmanship training.

This would seem to be a strong argument if it were not for the fact that an examination of the G-5 reports and of the training schedules of training centers in the United States discloses that little attempt was made at home to teach the men their most important duty, the use of their weapon.

These training schedules called for 18-week training periods, divided into sub-periods of three weeks each. In the first three sub-periods or nine weeks, there were 324 training hours. Of this time 192 hours were devoted to close order drill, and school of the squad, platoon and company. Only twenty hours were devoted to preliminary marksmanship, such as position, and sighting and aiming exercise. The remaining 122 hours were devoted to entrenching, scouting and patrolling, camouflage, combat formations, and other subjects.

In the second nine weeks there were nine hours devoted to preliminary marksmanship and two weeks to a period on the range. This range period was frequently passed over (hence Pershing's cables) under the influence of French and British instructors who wanted more trench digging and close order drill.

Here we see why four months was not sufficient time to train men in accuracy with the rifle. Under that system of training a lifetime would hardly be sufficient. In the first nine weeks over 50% of the training would never be applied on the battlefield and less than 7% of the time was used in teaching the use of the rifle.

So we can discard the argument that time will not allow sufficient training in accurate marksmanship. History shows that time will allow such training. And since history also shows that such training is both desirable and necessary, sufficient time must be allotted. A commander would be reluctant to send his artillery into action if the shells were not loaded with the proper charges; he should be just as reluctant to send his infantry into action if his men are not fully trained.

As to the last argument that the adoption of a semi-automatic rifle will send such a hail of bullets across the battlefield that accuracy will be unnecessary, it has already been shown that the character of individual rifle fire is such that this is an impossibility. It is an impossibility even if the rifle functions perfectly and there is an unlimited ammunition supply.

A semi-automatic rifle, instead of requiring less training in marksmanship will call for an increased amount of training. The history of all fire-arms shows that as the power of the fire-arm is increased the training required is increased even more.

Those who hope that the introduction of a semi-automatic rifle will result in less of the (to them) "monotonous" marksmanship training disregard the true purpose of such a weapon. This purpose was recognized before World War I as shown in a letter of the younger von Moltke to Ludendorff, as follows: "I must insist that in the infantry action it will not primarily be a question of shooting more with an automatic rifle. It is rather that its greatest advantage lies in the fact that the infantryman will be able to shoot more accurately and

easily than under the old system, thanks to less 'kick' and the partial elimination of loading movements, especially in rapid fire."

The same idea is embodied in the French training regulations, "Skill in fire results from two elements, which are, in the order of their importance, accuracy and rapidity. This last ought never to be acquired to the detriment of the first."

Thus we see that the adoption of a semi-automatic rifle, far from reducing the amount of accuracy needed, actually increases it; and the amount of training required is correspondingly increased. For since the individual capacity to expend ammunition is increased, the individual training required to achieve results with the expenditure of the ammunition is likewise increased. It is not "rounds per minute" that get results. It is "hits per round per minute." If a soldier gets one hit in ten rounds a minute compared with a soldier who gets one hit in 30 rounds per minute shooting a semi-automatic rifle, the latter has less actual fire power than the former.

It is significant that at the same time that all other nations are emphasizing, according to their national ideas of marksmanship, the need for increased accuracy in rifle shooting, none of them have adopted a semi-automatic rifle. And there have been plenty of various types offered for adoption.

The reasons are two-fold. In the first place the lessons of the last World War show that even in a stabilized situation the supply of ammunition to the front line troops is a most difficult problem. In most cases it could not be carried out, or was only carried out at great sacrifice. That is amply evidenced by the large number of citations and decorations given in the last war, not for fighting, but for getting ammunition to the fighters. The interruptions in battlefield supply will be even greater in the future, due to the increased use of aircraft against rear installations and the inclusion of high-angle-fire weapons in the forward units. To those who say that every faster firing weapon has been objected to on the grounds of ammunition, they may be reminded that soldiers today can carry no more ammunition on their person than they have since the introduction of magazine rifles. And further, that the tendency in modern armies is to carry less ammunition on the person in order to increase the mobility of the foot soldier. In the Polish campaign the German infantry carried only 125 rounds on their person. Our own Army, even though about to adopt the M-1 rifle, contemplates only 116 rounds carried by the soldier, according to an article in the *Infantry Journal* by General Lynch, the present Chief of Infantry.

The second reason is that the use of such a weapon would be an attempt to pervert the infantryman from his true purpose, by attempting to make him a two-legged machine gun. This has been expressed by Liddell Hart in the following quotation, "For volume of fire infantry cannot compete with mechanized arms—extreme accuracy of fire is the only justification for the infantryman. The only infantryman of use in modern warfare is one so highly trained in the use of cover that he can stalk machine guns, and so highly trained as a shot that he can pick off their crews."

There are other arguments against adopting the pro-

posed model of semi-automatic rifle. Compared with the 1903 rifle it is less accurate, has less range, has less penetrating power, is considerably less reliable, is more expensive and difficult to make, requires more care to keep it functioning, and will necessitate the adoption of an ammunition that reduces considerably the effectiveness of the .30 caliber machine gun. These defects are enough to make the value of such a rifle extremely questionable. But in addition, the fact that the purpose of its adoption would be a negation of the mission of the infantryman, would make its adoption a fatal error, if not to the nation, at least to many of our soldiers in war-time.

Before summing up there is one important point that should be emphasized. And that is the effect on morale given by excellent shooting. It would be well to remember Napoleon's oft-quoted maxim—"The moral is to the physical as three is to one."

With that emphasis on morale we can recall that in the Revolutionary War, the War of 1812 and the Civil War, it was the troops who could shoot and who knew that they could, that were the hardest to beat. The men felt that as long as they had their rifles and ammunition they could not be beaten. Conversely, the opposing troops had the helpless feeling of being hit without being able to hit in return. The Germans, in World War I, describing the demoralizing long range fire of the Americans, have testified as to the strength of that feeling.

The same was recorded in the Boer War when numerous participants or eye-witness observers described the demoralization, the feeling of despair, that overtook the British foot-soldier when his own fire (based on the theory of volume of fire) was so ineffective compared with that of the Boers (accurate, aimed fire). There are numerous descriptions of how, in desperation, bodies of British troops would surrender to smaller Boer forces. They just got tired of being hit without being able to hit back.

The confidence, the morale, the belief in one's self that skill in the use of weapons brought to some of the troops engaged in these previous wars is more than ever necessary. Ludendorff in his book "The Nation at War" has described the necessity. "Modern conditions have led to a loosening of the units within reach of the enemy's fire, thus isolating every individual soldier to an extent never known before—making enormous demands on the morale, courage and training of the individual; and in order to give him morale and courage his training must be most thorough."

The morale, the initiative, the spirit of confident daring that results from such training that every individual feels himself a master of his weapon, was well illustrated in the Russo-Finnish War and in the German-Polish campaign. The attitude that it breeds in the men is illustrated by the remark of a young Finnish member of the Finnish Legation in Washington, D. C. Speaking to the writer about the Finnish training, he said, "When a Finn takes cover he does not just take cover, he gets a place from which he can shoot the enemy."

Modern conditions have made obsolete a reliance on the type of morale bred by close order drill, a kind of mass courage, a feeling of companionship and comfort from the close grouping of men, a confidence in the mass

of which the individual feels himself a part. Instead the individual must have confidence in himself as an individual, and instead of a feeling of confidence in the mass, as a mass, he must have confidence in the individuals who compose that mass. And this personal morale and confidence can only be developed by a training of the individual which makes him a master of his weapon and develops his intelligence and initiative. For the infantryman this training with his weapon, the rifle, must be such as to make him able, and know that he is able, to hit anything he can see.

Having made an examination of the various arguments of those who believe we should replace accuracy of rifle fire by volume of rifle fire, we can see that none of them are based on fact, but only on delusions as to the characteristics of rifle fire, the lessons of history and the abilities of semi-automatic rifles.

Far from reducing our training in marksmanship we should increase that training and make every effort to make it more effective. Not only should we keep our present range marksmanship courses, in order to form the correct habits of mind, eye and muscle, but we must give habits proper exercise for battlefield work by holding practices on moving and disappearing targets and by holding field combat exercises. Our efforts must be to produce the kind of battlefield shot that Jackson had at New Orleans. The kind who can "put something in the pot with every shot."

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A WORD OF CAUTION

Experienced shooters do not need this warning, but it might just happen to help some others.—Ed.

Editor, AMERICAN RIFLEMAN

Dear Sir:

Since every article in *THE RIFLEMAN* about an old or unusual gun causes mental riots for those who happen to have the described firearm, I would urge that you postscript Walter Roper's article "When I Go Light," and label his little Remington .22-caliber pistol "Dangerous" and "Poison."

Although Mr. Roper did not mention this characteristic, these tiny Remington single shots have no hammer safety whatever, and when loaded with the hammer down, the firing pin tip on the hammer bears directly on the case rim—and the main springs in these little Remingtons are stiffer than a Nazi salute.

These little pistols were popular among Union officers during the Civil War, and were more heartening to the Confederates than the rebel yell. An article which appeared a number of years ago in one of the sporting magazines, or some gun book I have forgotten, related that many Union officers were injured when the guns (with a cartridge in them) were dropped, or bumped smartly in a vest pocket.

The many officers who used the pistols evidently carried them while in dress uniform, because of their pee-wee size. * * * *

PARKER R. SNYDER.

SINGLE-SHOT RIFLES

(Continued from page 24)

my Marlin the thousands of rounds necessary to really test it, I used a file and prick punch on all important parts, and ended this quick test with much admiration for the materials used.

Clever design provides a space in the front portion of the trigger guard to pivot and partially house the short arm which pushes the firing pins back into the cocked position. As is so often the case with a new model, not all of the hidden parts are given a truly fine finish, but no parts depending upon good finish for proper functioning have been neglected. Only one item of design impresses me as a bit weak: the spring holding the top-lever into its close position is a U-shaped wire compelled to bend rather sharply as it functions, and may need occasional, although inexpensive, replacement.

The upper and lower tangs are in one piece, as in the new Stevens and Savage tip-ups, but are tapered more and have rounded corners where they join the thick portion of the action. Buttstock inletting is more complicated in the Marlin than in the other new tip-ups, but is still simple in comparison with many older rifles and shotguns. A square shoulder at the rearmost extension of the action imparts most of the recoil to the stock and is less likely to split the wood than is a rounded shape at this point. Above and below the square area are rounded extensions to give a better appearance.

The front of the stock mortises on each side into an undercut portion of the action, but the area of contact

between metal and wood is small, although it should tend to prevent most spreading and splitting tendencies. The stock is held to the action by a sturdy stock bolt through the grip, giving maximum strength and a means of taking up wear.

The forearm of the Marlin snaps on and off as do those on Stevens and Savage tip-ups, but is held by an encircling steel ring clasping the lower barrel instead of by the hook and spring found on most guns taking down in this fashion. The difference is necessitated by the extraction system of the Marlin, which demands that the forearm be held firmly against the hinge joint, on which cams are cut actuating arms in the rear of the forearm which in turn open the big extractor serving for both rifle and shotgun cases. A solid lug beneath the lower barrel engages a slot in the forearm and holds it securely against the hinge joint.

The breeches of both barrels are flattened to fit exactly into the receiver, and a big lug below the breech locks into a square recess piercing the bottom of the action. This construction, in addition to the usual hinge pivot and locking bolt, gives great strength and durability.

The open sights furnished with this rifle are quite good. The front sight is a silver bead and the rear a wide V with straight sides permitting quick centering and good alignment. I do believe, however, that a ramp front sight would be superior to the dovetailed type now furnished. The dovetailed sight base seems clumsily bulky on such a slender muzzle, and a sight slot on a small round barrel must be deep or weak, either of which is undesirable. Then, too, sight slots are difficult to cut straight across round barrels.

The Marlin is not tapped and drilled for scope mounts, but enough metal is left at the breech of the rifle barrel to securely anchor top mounts of the block type.

Weighing slightly over 6½ pounds, this Marlin is heavy enough for steadiness, yet light enough for quick pointing. Available in the Hornet or Bee rifle cartridge, it will appeal to those who need more than the rim fire .22's and who want a shot barrel along. It will also appeal to those who want the finest and most expensive standard development of the period.

Look at All Three!

All three of the new tip-ups have 14-inch stocks, making them at once long enough for men, yet because of the lightness of the guns and the trimness of the stocks, boys and small women shoot them well. Shotgun buttplates and generally approved drops at comb and heel add to their general usefulness, yet leave them truly man-size. I suppose some old timers will object to my use of this term, wishing to associate "man-size" only with guns that kick with numbing effectiveness. In fact, one old timer looked at my Marlin .22-.410, and grunted "Popgun!" He is one of the old timers who killed much of the big game, which leaves us today chiefly with a need for light guns.

Here are, however, three of the best bets I know of in their type. Every one is a remarkable value, and enough difference exists between them to suit all needs.

The End.

A CHANCE TO WIN

(Continued from page 31)

enough to place its owner among the top half dozen shooters on the list, but to be fairly sure of winning a match, one of these top-flight men must normally turn in a score of 196. This is a reduction of 50% in the number of points dropped and is comparable to a 150 average shooter firing a score of 175. There were three starting assumptions:

- (a) if every competitor in a match dropped only half his normal number of points, then all shooters showed equal improvement and should be rated nearly equal, with the highest average shooter outranking all others;
- (b) if each contestant in a match fired a score equal to his normal average, they should all be rated even with the highest average shooter outranking all others;
- (c) if every competitor in a match fired the same actual score, the lowest average shooter should outrank all others.

The table is easy to use. It is similar to a mileage table of the type often found on highway maps. If you follow down the column under your average to the point opposite the score fired you will find an adjusted score, worked out to three decimal places, to be used for ranking purposes. It may provide one of the answers that "Mr. Average Shooter" has been seeking for these many years.

The table is too new to be judged critically but in the few events in which it has been used, it has demonstrated a definite value as an interest arouser. For instance, the ten high competitors on one of the St. Louis league bulletins read as follows:

Rank	Score Fired	Average	Adjusted Score
1	188	174	196.534
2	188	175	196.402
3	191	184	195.871
4	192	186	195.857
5	193	188	195.847
6	192	187	195.575
7	187	179	195.397
8	182	171	195.194
9	186	180	195.043
10	186	179	194.806

With the aid of this handy method of handicapping it was possible for a 174 average shooter to win a match with more than 80 entries in it, and the high scores of 191 and better were ranked in the first ten places.

The successful use of this, as of all handicap systems, is dependent upon the accessibility of accurate averages indicating current ability. It is desirable to use a sliding system of averages, considering only the last three or four scores fired, rather than the scores for an entire season, because you will normally have only a few scores for a large number of shooters and this system would place all competitors on an equal basis. This can best be done in a league or club whose shooters fire regularly—the very place where a handicap system can bring the most pleasure by increasing competitive interest in every match by giving Mr. Average Shooter a chance to be a winner.

ELEMENTS OF RELOADING

(Continued from page 15)

lower end in much the form of the chamber of the arm the cartridge is to be used in, and has a crimping shoulder in it. The upper part is reamed to slightly over bullet size, and guides the bullet into the case mouth. The base is recessed on one side in a way that will prevent the crimping shoulder from coming into contact with the case if no crimp is desired, while the other side allows the chamber to be driven down against the rim of the case, or flush with the head if the case is rimless, so there is no adjusting the crimp. The plunger is formed to fit the nose of the bullet, and is adjustable for seating depth. In operation, a case is put into the chamber and the chamber placed in the base. A bullet is dropped down into the top of the chamber, followed by the plunger, and a few light taps on the head of the plunger seats it. A sharp rap on the head of the plunger will drive the whole chamber down and crimp the case. A rubber or rawhide mallet, or even a stick of wood, is all that is needed for driving the bullets, as no great force is required to either seat bullets or crimp the cases. As to the crimp, well—you drive the chamber down, and take what you get; but the gadget is all right. As a matter of fact, those seating dies that are adjustable as to crimp are set and left set in ordinary practice, so you will get just as uniform crimping with the B. & M. bullet seater as with any other tool, unless cases happen to be short.

The B. & M. must be screwed down to a table or bench, or it may be mounted vertically on the wall or a post. Mechanically, it bears a strong resemblance to the Bond tool except for the utilization of its reciprocating action. The Model 26, with the separate bullet seater, sells for \$13.50, and the Model 28 costs a half a buck more. Like other tools using interchangeable parts, the cost of changing from one cartridge to another depends upon what you already have and what you need, plus the possibility of having to return the tool to the factory to have the new parts fitted.

This tool will not use an expander with a shoulder for removing the crimp, as, normally, the case mouth must pass entirely over the expanding plug before entering the neck die, and any enlarged shoulder on the former would prevent this. I have made, and others have tried, expanders with shoulders for removing crimp, to be used independently of the neck die, but the results are not good. Either from faulty alignment or too much buckle in the parts, one side of the case is usually flared excessively while the other is hardly touched. However, the exposed end of the rod is tapered to a cone, and the cases may be tapped against this to take the crimp off before neck-sizing them.

The Yankee Model C Tool

This is a little-advertised tool that has been on (and off) the market for a good many years, but there are quite a lot of them scattered around, and the basic principle has some very commendable features. It is made to clamp to a table or bench, and the body casting has a lever hinged at the back, top, while at the under side is a steel guide inside of which the chambers or dies slide. These

parts are connected to the lever through two short links, made easily removable for changing the parts. The guide is open at the front, and carries a form-cut shell holder at its lower end. The cases are slipped into the shell holder from the front, and the chambers or plungers are forced down over them by a downward movement of the lever. This is a very good principle, but in a small tool of this kind it must be employed at something of a sacrifice in other ways. As the seating or D.A. chamber must be hooked up to the links, the bullet seating screw can only be adjusted by taking the chamber apart. There is no means of locking this screw in position, but there is also little tendency for it to get out of adjustment, especially if the threads happen to be a close fit. Adjustment of crimp is accomplished by a stop screw at the upper front of the tool, and this screw limits the downward movement of the lever. You do have to keep your eye on the angle of the T handle of this screw to see that it doesn't get out of the proper position.

Decapping is done with a simple cap extractor, dropped into the case and pushed with the D.A. chamber. In priming, the priming plunger is substituted for the chamber, and the cases are placed head-up on an anvil that is formed at the lower end to go into the shell holder. Expanding and neck sizing are done with parts hooked to the lever.

I do not know what the present price of this tool is, or whether it is now being made, as correspondence addressed to the manufacturer requesting this information has brought no response at all; but the tool is all right, if it appeals to you and you can get it.

The heavier tools can be boiled down to the same fundamentals as those mentioned above: a set of dies, and the means for pushing the cartridges into them and pulling them out again. Full length resizing only means a difference in the die used, and the power available to use it. The larger the tool and dies, and the better the fits, the more money it must cost. The few pounds of iron and steel that go into a reloading tool don't cost a great deal, but making them into the finished article involves time, and time costs money. It takes just twice as long, and costs twice as much, to drill a hole two inches deep as it does to drill one only one inch deep, and nowadays you can't even pick up a part and put it down again without adding to its cost; so if one tool costs \$40.00 and another one \$10.00, there is a very good reason for it, in spite of the fact that the two may work on much the same principle.

A CLUB'S JUSTIFICATION

(Continued from page 12)

something an older man can do to help, too." Even if I too hadn't been in that age group, I'd have agreed. If it comes, we'll see! And by the way, only two of our students had been club members—pistol shooters, good ones, now taking up the rifle. Some of our best students had practically never fired a rifle before. One of them, when we finally bored through his modest reserve, proved to be a former infantryman, veteran of the Mexican campaign and the Great War. He gave us some help when we badly needed it.

As for equipment, we use what we have. The club's two M I Springfield, fitted with the standard blade front and 48 rear, most closely simulate the army rifle in weight and feel, and thus are ideal. Our range accommodates four shooters at a time, and the two other rifles are a 52 Sporter and a Remington 513, the latter kindly loaned to us by a Remington representative from a nearby town. The Sporter has a Redfield flat-topped front under the usual sporting sight cover, and we use only the post insert in the front sight of the Remington, being anxious to copy the military sights as closely as possible. I doubt if there are a half dozen 52 Winchesters and 37 Remingtons in all Lynchburg. It is rare indeed that one such target rifle appears on our range. That's just as well for our school, as a twelve-pound rifle isn't much like an army Springfield. The four rifles first mentioned are on hand every evening, and we urge our people to stick to one gun and learn it. We have only two shooting mats and can't afford to buy more. An old "buffalo robe" and a 1917 shelter half fill out, and some of the boys have bought those rubber elbow-protectors used in basketball. For targets, we furnish without charge the 5-bull 50-foot cards that the D. C. M. gave us. They are less confusing than the 10-bull variety. Students usually keep their targets as records and use the blank spaces for notes and for sighting memoranda. When they shoot the .30's we'll furnish the M I ammunition; it didn't cost us anything, either, except the express, and I think our treasurer has lost the receipt for that! We'll have a student tournament, the last meeting, and give a medal. It cost \$1.95, plus \$.60 for engraving, but nobody laughs at it. We'll exhibit the ten highest targets to the gaze of the untaught public and print the ten highest (only!) scores in the paper. In fact, we'll have a hell of a lot of fun.

What else is the club getting out of it? Well, not to put too smug a point upon it, the satisfaction of service. You've probably heard the remark that's going the rounds among the sophisticates: "What's the use of a rifle in modern, mechanized war?" We find our answer in a few bright words in the blood-dark pages of recent history, such words as "Finland," "Dunkerque," and "Greece." There and elsewhere the humble rifle has played its part. And army men say that rifle skill is an aid in the use of heavier hardware, such as anti-tank and anti-aircraft guns. Sounds reasonable, especially if a fellow understands the use of sights. And we give them a lot of that.

I don't know of anything else we get. Our school is positively not a membership drive. Two students did join our club, but we almost fell over backwards in not encouraging them to do so. We make 3/10 of a cent on each box of cartridges we sell to our students, and if we had a penny-splitter we'd use it. We don't want to spoil a satisfying thing for the sake of a little loot. And it surely is satisfying: not a yelp from our members about the shooting time they have had to give up, or the work they have taken on.

NOTE: Here a small and struggling (by their own statement) club has taken hold of an idea, and, unselfishly and patriotically, gone ahead with it in a way that is rendering a real and worth-while service to the shooting game and the Nation. What this club is doing, other clubs can do.—ED.

THE OLD COACH'S CORNER

(Continued from page 16)

continuous error of about a half to three-quarters inch while I was applying my squeeze. Add this error of hold and aim to the $1\frac{1}{4}$ inch error of ammunition and you have about a two inch group, and if your sight adjustment is just right you just about get a possible. Perhaps about half the time you do get a possible, but this is not quite good enough. At least that was the best I personally could do with the 10-power scope.

About this time, in my constant studies of the methods used by our leading small bore shooters, I learned that a great many of them were equipping themselves with 20-power scopes, and apparently with great benefit. So, just to see how that would be, I set up a 100 yard target at 50 yards and tried aiming on it with my 10-power, which of course is practically the same as using a 20-power at 100 yards. It was at once apparent that the aim was much clearer, that the tremors were very much more distinct, and that smaller tremors could be seen. So I dug down deep in my pocket and got me a 20-power and began practice with it. Again I was up against the effort of trying to minimize those smaller errors that I could now see. Continual hard practice brought such a measure of success in this that within two weeks there was a most decided improvement in my scores. I got possibles much more frequently than half the time, and I got a lot more shots in the X-ring. I had arrived at the master degree.

To reduce your tremors to the minimum, that is, to the minimum that is possible with your equipment, I should say that you absolutely have to adhere to all those principles of hard and steady holding that are so admirably set forth by Captain Andrews in his little book "From Tyro to Master" (25¢ from the N. R. A.), which I strongly recommend to you. Then the more clearly you can see your tremors, the more success will you have in eliminating them, and the smaller the tremors you can see the greater will be your success in getting towards an absolutely perfect aim and hold.

Not only does the very high power scope enable you to train yourself to hold very much steadier, but practice with it will also very considerably improve your holding with iron sights. With iron sights you don't see small tremors, but it will be plainly evident to you that you are really holding steadier than before. You seem now to ring the bull more perfectly, and it stands out steady and jet black while you gradually apply that last ounce of squeeze; and your iron sight average goes up.

The high power scope also enables you to spot your shots quite easily, and to read mirage and judge wind while the rifle is at the shoulder. Thus it makes it easier to shoot within the time limit. Saving time, you can often afford to hold up a little in tricky wind conditions, and then when things get better, pour in your remaining shots faster. It is possible that in the South and Southwest a shooter might occasionally have trouble in aiming through heavy mirage with a 20-power scope. That I do not know, as I have had no experience with it in the South, but I have had no indication of this in my country, and certainly we have gotten clear vision through 20-power spotting scopes for many years.

HANDICAPPED BARRELS

(Continued from page 20)

had saved for five years for this particular job. The shaping is practically complete from the guard forward, and the forearm fills your big paw comfortably and yet doesn't look like a young bath tub, but the final rough shaping of the stock from the guard to buttplate will be done right on the range.

As he explained to you at the start, he is making the stock $2\frac{1}{16}$ th inches thick at the rear wall of the magazine-well and a little over $2\frac{1}{16}$ th inches deep (or as deep as he can make it and still have the action function perfectly). Around the magazine-well, where the average stock is usually weak and flexible, he has built a deep, rigid truss with heavy side walls and which has almost double the strength and stiffness of the military stock at this point. The top line of the stock is a *straight* line from forearm tip to rear end of receiver, nothing having been cut away to weaken the stock or to spoil this important line, except to permit proper ejection and functioning of the action parts.

Being a privileged character, you walk into his shop for about the tenth time and throw a fit of joy over the job while you give him a lot of blarney. And then you lay a receiver sight with a two- or three-inch slide on the bench and tell him to put it on when he is ready for it. You get a deep growl and a dirty look from him, and nothing but the greatest self-control prevents his using a fourteen-inch rasp on you where it would do the most good.

The fitting of this sight to a rifle with a stock of this type is a criminal operation, and has always suggested to me the building of a finely engineered suspension bridge with a big factor of safety and then sawing partly through the cables.

The alternative, of course, is to use a scope. As it is to be an "any rifle," you are bound to come to the scope anyway so get it now and balance the family budget by cutting out such extravagances as "permanents," silk stockings, fur coats, bridge, cosmetics, etc., for your better half, and do your part with as little inconvenience to yourself as possible.

THIS HANDGUN GAME

(Continued from page 25)

pointing existing at the instant the bullet leaves the muzzle amounts to anything, so why not build up the pressure on the trigger promptly and get the shot away while one has breath enough and before unsteadiness begins?

Most shooters have had the experience of making better scores in timed fire in the Camp Perry course than they made in slow fire. Taking a hint from that experience, I have tried the scheme of firing three and sometimes five shots without taking the gun down, and, furthermore, of getting the shots away promptly without any fussing or long-holding. Over a period of three months, shooting almost every day, my scores shot in this way are decidedly better than those fired in the old way with what I thought was utmost care.

OVER THE NEWS DESK

RIFLE SHOOTING IN ADAPTED PHYSICAL EDUCATION CLASSES

By C. R. OSELL

We have used rifle shooting in our program of educational activities at the University of Minnesota because we believe that everyone can and should engage in some activity of a recreational nature. Insofar as possible, we choose to give instruction in those sports which have a carry-over value, that is, something that may be continued after the student has left school. This, of course, makes it imperative that the equipment necessary for the sport is not too expensive or too cumbersome for the individual to set up.

As an example of the use to which we have put rifle shooting in our adapted physical education program, let me cite the case of one of our students who is a spast'c. (This is sometimes called the disease of lost co-ordination.) Rather than have him rehearse tedious exercises designed to correct his condition, we endeavored to give him some activity that he "wills" to do; something which calls for co-ordination in its performance. He was not expected to fire what would be considered a good score, but his progress has been more than gratifying. His first attempts did not even hit the target sheet at the usual 50 feet, but with the help of Sergeant Cruse, he was eventually placing all shots on the target. To an unhandicapped individual this would not mean much of an accomplishment, but to this particular student it spelled success. There is nothing more beneficial.

We have cases of poliomyelitis where the legs are atrophied and in braces or the arms are practically useless. Because "play, which is necessary for the normal individual, is also necessary for the handicapped," we cannot tell these people we have nothing for them. If the arms are not too atrophied to hold a gun we teach them rifle shooting. In this sport we have recreation in which their handicaps are minimized, and an activity in which they can engage all their lives. It is always possible to join a rifle club or to set up equipment of one's own.

This same holds true for heart cases. As a general rule this type of handicapped student is automatically exempted from participation in physical education activities. But again, in rifle shooting, we find an opportunity for such students to compete with their classmates on an equal basis.

To some of our students rifle shooting has become a hobby. Others have learned safety with firearms from their instruction. To my mind, this in itself has made the course worth while. But in conclusion, I would acknowledge the great benefits which have resulted from the use of rifle shooting in my own experience with it. It has filled a much needed place in the lives of these students whom I have mentioned, but combining educational and recreational activities in a very worth while sport.

COACHING "A LA TEWES"

The death of Captain Earl T. Dabb, old-time Seagirt rifleman, in late September, has reminded Colonel Bill Tewes of the following incident. "Colonel Bill" has been known since the early days at Seagirt as one of those rare individuals who combines greater-than-average marksmanship ability with that uncanny ability to sense an impending change in conditions which makes for outstanding ability as a long range coach. The modern military rifleman shooting in the comparatively plush-bottom comfort of today's National Match facilities including boat-tail bullets and Magnum cartridges has little conception of the quick, keen analysis which was

required of the riflemen who won the Wimbledon, Leech and Herrick with the Krag and the old Springfield ammunition.

Here is the story just as Colonel Tewes sends it to us:

The Fourth Regiment Team was competing in the Columbia Trophy Match at Seagirt in 1906, while I did the coaching. It had been a difficult day of sneaky, shifting, baffling wind conditions. The atmosphere seemed to flow in alternating streaks of heat

(Continued on page 45)

NEW TROPHIES

XIII. The N. R. A. .22 Pistol Championship Medal

In designing the medallion for the N. R. A. Individual .22 Caliber Championship, Jack Lambert has called upon typical scenes from other sports to indicate the various factors which go to make up a championship pistol shooter.

According to this medallion a top-flight pistol shooter must combine a sense of timing equal to that of Jack Dempsey or Gene Tun-



ney, the delicate skill of an adept fencer and the co-ordination of the crew of an eight oared shell. This medallion is issued in the N. R. A. .22 caliber pistol championship match, won the past two years by Melton R. Rogers, of the U. S. Treasury team. Rogers' score of 296 x 300 fired in 1939 broke the former match record of 294 held by his teammate Arvid Anderson. Rogers' 1940 score was a 288. The 1938 winner was Oliver J. Yanick of the St. Louis Police Department.

ANNUAL MEETING

The annual meeting of the Board of Directors of the National Rifle Association will be held February 7 at the Mayflower Hotel in Washington. The business meeting will be held at two o'clock Friday afternoon for the election of officers and other business to be brought before the Directors.

As in the past, the dinner Friday evening will be the occasion of most significance, as official Washington, Congressional, Administrative, and Military leaders meet with the NRA directors and members in an evening of national defense considerations.

The invitation is again extended to all members and friends of the NRA to attend, particularly Life members and club officers. Reservations should be made with the secretary as early as possible.

TIMED FIRE with Bill Shadel

• "Capital Stuff," and we're quoting from a column by that name in a Washington newspaper as another warning of what's ahead. "There will shortly be a loud yelp from American hunters when they discover what the Federal-State Conference on Law Enforcement Problems of National Defense has recommended. This body, sponsored by the Department of Justice, is working out model legislation for all 48 states—and among the legislation recommended is a Federal statute requiring the registration of all firearms. Hunters have been fighting proposals of this kind for fifteen years. It is a question, however, whether they can bring enough pressure to bear this time."

• At the University of Minnesota, always a contender for collegiate rifle honors, rifle shooting is the most popular sport of the fall and winter intramural program among the University Engineers. Their choice of rifle shooting with 144 entries is followed by the other sports in this order: swimming, boxing, skiing, hockey, fencing, badminton, handball, skating, wrestling, volleyball.

• That article by C. R. Ossel of the Physical Education Department, Minnesota U on page 41 this issue should be of interest to those seeking real concrete values of riflery, other than purely recreational.

• There's no doubt about it. The present gallery season is by all odds the greatest unified program of league shooting in the history of the sport. As we go to press, with entries still coming in, better than 400 teams are entered in some 45 leagues. More than half of these leagues are firing on a shoulder-to-shoulder basis, but all pointing for the state and national titles at the end of the season. Standings will appear from time to time in forthcoming issues. It looks like we'll have a real national champion squad selected this year.

• And speaking of gallery shooting, here are some new records, hung up as early as November 1. Edward J. Neumann, Chicago, is responsible for two of these, timed-fire with the .22, a 198 x 200; rapid-fire with center-fire, 189 x 200. Kas Simons, Chicago, rates the other, slow-fire, center-fire, 191 x 200.

• Another instance of a public official sponsoring a rifle club in step with the present preparedness drive is called to our attention by Louis Capek, of Chicago. This new club was formed through the sponsorship of Mr. Edward J. Kaindl, Recorder of Cook County, Ill. All employees of his office are eligible to join and a very large group did. Arrangements were made at a convenient range within walking distance so that members can now walk over during their lunch hour and spend at least a half hour under careful supervision. The rifles, ammunition and other equipment was purchased by Mr. Kaindl.

About thirty percent of the members are women. Some of these, as well as some of the men, had never fired a rifle before. This made explanatory talks and some dry practice necessary. The better shots were encouraged in inter-club competition which proved interesting also to the rest of the club who were plugging for one or the other of their friends.

It seems that Mr. Kaindl is very proud of this club. This might well prove an incentive for other public officials to assume similar sponsorship, if they are properly approached on the subject.

1940 NATIONAL RANKINGS

The national rankings of the top-notch rifle and pistol shooters—those much discussed but prized listings—are with us again. Here is the 1941 edition. Based entirely on performance throughout the 1940 season just closed, they give us a bona fide record of achievement over the long haul of state, regional and national matches.

Some 150,000 scores posted at NRA headquarters from registered events of 1940 go to prove that a man has to be good to rate a place in this Who's Who and that these men are definitely tops in their field. The toughest competition was demanded in considering only Class A and B tournament shooting as well as the defeat of only Masters and Experts in these events; Consistency required in the minimum of 480 shots for ranking; well rounded competition assured by insistence on attendance at the National or a Regional as well as at least one Class B Tournament. That just about settles all arguments as to how they get that way.

For the first time, rifle and pistol shooters worked out their standings on the same basis. The actual percentage figure in number of competitors defeated as compared with the number faced was substituted for old man average.

Rifle

Dave Carlson, New Haven, Conn., only recently crowned National Small Bore Champion rates the top position in the rankings, an undisputed champion in every sense of the word. The only other to tack on these two titles in the same year was Bill Woodring back in 1938. And Dave achieved this remarkable record the hard way, by facing more competitors than any other of the top fifty riflemen, a total of 6567 in 58 separate events. In fact, only one other of the top hundred, Al Ferber of Lakewood, N. J., excelled this competitive record. Ferber, finishing 78th in the rankings, faced an even 7200.

He picked no easy schedule for himself, for in addition to running the gamut of the entire Camp Perry schedule, he shot in two Regionals, at East Haven, Conn., and Camp Ritchie, went through the seven matches at Sea Girt, N. J., attended the New York and Pennsylvania State Championships and the Vandergrift, Pennsylvania, Matches.

It was a real comeback for Carlson, after falling far down in the National Rankings since 1936 when he finished second to Bill Schweitzer, who now exchanges places with him.

Champion Dave grabbed off thirteen first places for the year, including his win in the "400" Club Match at Perry over 54 honorary members of this exclusive group.

Genial Bill Schweitzer falls just short of the top honor for the second consecutive year, and again by one of those infinitesimal ten-

thousandths of the calculating machines. Facing 5881 competitors in a schedule similar to Carlson's, Bill's six first places coupled with his many place medal showings adds up by machine calculation to about the same story that is told in 1940 titles; second place to Carlson in the Grand Aggregate at Camp

1940 RIFLE RANKING LIST

Rank	Name	Ranking Figure
1	Carlson, Dave, New Haven, Conn.	9137
2	Schweitzer, Wm. P., Hillsdale, N. J.	9134
3	Israelson, Merle, Akron, Ohio	8933
4	Kuhn, Willet, Houston, Texas	8853
5	Woodring, Wm., Alton, Ill.	862
6	Lear, Samuel C., Vallejo, Calif.	8595
7	Triggs, Ransford D., Madison, N. J.	8489
8	Grooms, Stan, Grove City, Ohio	8422
9	Parker, F. O., Rock Island, Ill.	8421
10	Kuhn, Frederick O., Stratford, Conn.	8415
11	Hamer, Vere F., Woodstock, Minn.	8271
12	Bond, Sam, New Philadelphia, Ohio	8221
13	Marckmann, Otto C., Pasadena, Calif.	8177
14	Willman, Roy O., Mt. Wolf, Pa.	816
15	Says, William A., Cincinnati, Ohio	8072
16	Lacy, James, New Haven, Conn.	8063
17	Lacy, Jack, New Haven, Conn.	8005
18	Pierce, E. H., Chicago, Ill.	7990
19	Blensinger, Arthur, Rochester, N. Y.	7878
20	Gardner, Russell, Troy, Ohio	7818
21	Henning, Martin S., Coraopolis, Pa.	7803
22	Klotz, Milton A., Akron, Ohio	776
23	Aust, R. W., Chickasha, Okla.	7737
24	Forstrom, George, Pontiac, Mich.	7732
25	Dorian, Robert, St. Louis, Mo.	7722
26	Schimmel, Ferdinand P., Detroit, Mich.	7666
27	Whipple, Charles, Somerset, Pa.	7648
28	Bittner, Lawrence E., Beat Rock, Pa.	7618
29	Molt, Fred M., Asheville, N. C.	7596
30	Potter, Harry E., Downing, Mo.	7594
31	Newcomb, R. A., Tulsa, Okla.	7553
32	Oakey, Walter H., Jr., Falls Church, Va.	7532
33	Martin, James R., Wichita Falls, Texas	7489
34	Lippencott, J. C., Jr., Elizabeth, N. J.	7431
35	Smith, Charles Hoyt, Poughkeepsie, N. Y.	7428
36	Saunders, Earl M., Louisville, Ky.	7418
37	Wood, C. L., Casey, Ill.	7352
38	Tekulsky, Samuel, New York, N. Y.	7327
39	Bongardner, Grant P., Pottsville, Pa.	7313
40	Miller, John O., Los Angeles, Calif.	7313
41	Comstock, Hilliard, Santa Rosa, Calif.	7307
42	Oswald, Floyd T., New Tripoli, Pa.	7304
43	Pade, Ernest M., Sellersville, Pa.	7287
44	Kelly, Dorothea, Akron, Ohio	7255
45	Mathewson, Dave, New Haven, Conn.	7254
46	Frank, Carl, Rochester, Mich.	7242
47	Dunlap, Tom, Glendale, Calif.	7237
48	Sullivan, Byron, Washington, Ill.	7208
49	Berkheiser, Roy D., Hopewell, Pa.	7175
50	Tanner, Robert L., Sebring, Ohio	7135
51	Hunsicker, Arthur W., Akron, Ohio	7134
52	Spencer, Fred L., Eureka, Mo.	7127
53	Pope, R. C., Dallas, Texas	7099
54	McWithey, Roy, Harmony, Pa.	7094
55	Eakins, Fred O., Jr., Columbus, Ohio	7029
56	Bulgrin, Lew E., Owen, Wis.	701
57	Sullivan, Rip, Washington, Ill.	7004
58	Hatcher, John H., Charleston, W. Va.	6976
59	Charlton, Ted T., Hancock, Md.	6971
60	Prins, Eugene, Holland, Mich.	6966
61	Donaldson, W. C., Coraopolis, Pa.	6957
62	Kolbus, John, Perth Amboy, N. J.	6937
63	Kemp, Lonnie Everett, Isabella, Pa.	6934
64	Crockett, Othel, Logansport, Ind.	6925
65	Robbins, Wallace L., Glendale, Calif.	6896
66	Randle, Thurman, Dallas, Texas	6875
67	Combs, G. W. T., Jr., So. Orange, N. J.	6871
68	Hawcock, Emory, Monmouth, Ill.	6865
69	Handwerk, Earl E., Bear Rock, Pa.	6864
70	Carrothers, R. F., New Philadelphia, Ohio	6857
71	Perkins, Robert E., Fresno, Calif.	685
72	Symmes, John C., Atlanta, Ga.	6778
73	Allen, Loren C., Springfield, Ohio	676
74	Cole, Edwin, Highland Park, Ill.	6759
75	Holm, Theodore, Des Moines, Iowa	6745
76	McDonie, L., Washington, D. C.	673
77	Riordan, Jack, Aurora, Ill.	6714
78	Ferber, Alvin A., Lakewood, N. J.	6686
79	Putman, Byron E., Wheaton, Ill.	6684
80	Prins, Herman, Holland, Mich.	6673
81	Monroe, Bering, San Bernardino, Calif.	6661
82	Miller, Wilbur, Saginaw, Mich.	6651
83	Frohn, Frank L., Barre, Pa.	6648
84	Grosskopf, Marshall R., Marion, Wis.	6588
85	Spahr, Robert J., Chicago, Ill.	6569
86	Poe, Paul E., Rock Island, Ill.	6565
87	Archer, F. Paul, Miami, Fla.	6553
88	Braendle, George C., Lakewood, Ohio	654
89	Sadler, Lee, Danville, Ind.	6536
90	Lord, Elbridge L., Chicago, Ill.	6521
91	Rader, Edwin M., Lorain, Ohio	6519
92	Birkenbine, Jacob H., Manheim, Pa.	6508
93	Jensen, Max, Cleveland, Ohio	6474
94	Darkow, Arthur L., Akron, Ohio	6464
95	Kaylor, John E., Juniata, Pa.	644
96	Scott, Lloyd M., Coraopolis, Pa.	6438
97	Wark, John R., Kane, Pa.	6422
98	Rarick, Robert, Dayton, Ohio	6408
99	Wagg, Oliver H., Burbank, Calif.	639
100	Burkhart, Richard, Redondo, Calif.	6372

Perry, and holder of the secondary title for the past two years, the National Mid-Winter Championship of St. Petersburg, Fla. He also added on the Camp Ritchie Eastern Regional Title.

Next to fifth place ranking star, Bill Woodring, Schweitzer presents the finest record in the five-year history of rankings. First in 1936, 25th in '37, fourth in '38, and second last year, Bill pins on his fourth All-American medallion issued yearly to the top twelve.

Merle Israelson, Akron, Ohio, another of the early All-Americans with a ninth place in 1936, a tenth in the following year, managed another good year, good enough, in fact, for third place in the galaxy of stars. His 820 shots fired for ranking falls far short of the

two top places in extent of competition, but he garnered six firsts out of twenty events to build the old percentage figure up to a hundredth of a point above the fourth place man.

Willet Kuhn, Houston, Texas, helped himself no end by attending the Nationals at Perry. Here a first place in the 100 yards

any sight event over 289 Masters and Experts, a second, a fourth, an eighth, and an eleventh place, put him within striking distance of that national title, only four points below Carlson. He had previously brought out two firsts from the Southwestern Regional, and although giving way to R. C. Pope, of Dallas, for the Regional prize took the Texas State Championship over the longer course of a 4400 aggregate.

William B. Woodring, Alton, Ill., the only two-time top ranking shooter by virtue of his 1937 and '39 position, goes into fifth place this year. Coupled with a third place in 1936 and a fifteenth in '38, three successive National titles, the Midwestern Regional Title this past year, a first, a second, a fifth, and an eleventh place in the Perry marathon of September, Woodring by machine calculator or otherwise holds his ranking position deservedly. He is another of the well-tested men, near Carlson in number of competitors faced, a total of 6,224 in forty events. The Nationals, two Regionals, Midwestern and Camp Ritchie, and the University of Chicago matches make up his schedule for ranking.

California's representative in the top ten, Sam Lear of Vallejo had four tough west coast tournaments, including the Regional out there in which to garner his three first places, four seconds, three thirds, a fourth and five fifths. In fact, Sam never placed lower than eighth with the lone exception of one eighteenth place.

Ransford Triggs, Madison, N. J., is another of those well traveled shooters, facing 5,427 competitors in the Nationals, one Regional, Camp Ritchie, and two Class B's. He was fifth in 1939 rankings. Stanley Grooms, Grove City, Ohio, is a newcomer to the top ten listings, but attended his own Regional, the Nationals, and two Class B affairs to face 2643 Masters and Experts and prove his right to consideration.

F. O. Parker, Rock Island, Ill., also appears in the top ten for the first time this year. Faced 1552 shooters of the Midwest area in the Regionals and the University of Chicago matches.

In tenth place is F. O. Kuhn, Stratford, Conn., with a creditable showing at Perry, two Regionals and Sea Girt, to his credit.



Dave Carlson



Bill Schweitzer



Merle Israelson



Willet Kuhn



Bill Woodring

Pistol

Al Hemming is still tops. That's not necessarily news for Al has been showing the way to the lads for sometime now, but as he goes on in his winning way and sets up his third consecutive top ranking, it begins to dawn that here after all is the iron man of the pistol game. No matter how you figure it, Al turns in the most consistent performance year after year and 1940 seems no exception.

Al is rated equally high in sportsmanship, and has carried his honors with modesty.

Again this time, he opened himself up to the greatest number of challengers, being the only man of the top 100 to face better than 4,000 Masters and Experts in 78 separate events of nine Class A or B affairs. It's true that he was forced to give way to teammate Harry Reeves in the pay-off at Camp Perry for the all-around National Championship. Was led by this same Reeves in the National Mid-Winters at Tampa, but pounding away all season, he comes up with that old percentage figure that spells tops in the end-of-year summary. And while pointing toward that figure of wins and losses, Hemming during the 1940 season more than incidentally grabbed off the grand slam of pistol honors with a private ownership in each of the three national match course records, the .22, the center-fire, and the .45.

The 1940 Scorebook reads: two firsts at Perry, six firsts in three Regionals, five other firsts, 1,810 shots in the majors.

Harry Reeves, sharing the current spotlight with Hemming, is, to be technical, 18 ten-thousandths of a point under boss-man Hemming. That's not much of a margin, but so the machine says. That's seven tournaments, facing 3,798 would-be scalpers, a total of 530 places down from the top in sixty-two matches, and so the figuring goes. It places in runner-up position one of the finest pressure shooters, a fellow who was shooting in the pinches all season for those coveted national titles.

Paul C. Spavor, St. Louis, Mo., like Hemming and Reeves, a police officer, turned in the best performance of his shooting career, although he has been included in the last two national rankings—a tenth place in '39 and a second place among the .45 caliber shooters in '38. Spavor was brilliant at Perry with two first places over that large field to boost his percentage. Became Regional title holder at the Springfield, Ill. Mid-western Regionals in early summer and dominated the field in his own Missouri State Championships. Spavor faced 2282 competitors.

Walter Walsh, Washington, D. C., F. B. I. Agent, Eastern Champion, the highest scorer among the eight regional title clinchers, moves up one place over his last year's showing. His fourth place ranking for the past season's effort is due somewhat to his sparkling performance at Camp Ritchie where he took two first places, a second, two thirds, a fourth, fifth, sixth, and a twelfth place of his total entries.

Walter's early season form was hard to beat as at Tampa in March, he gathered a first, second, third, and a sixth, two sevenths, an eighth, and a ninth place in those hot contests. By Perry time he had cooled down somewhat. This was probably due, however, to his responsibilities as a member of the USMC Reserve Rifle Team, although even here his fourth, fifth, and a seventh place of three crowded pistol events is no mean shooting.

Garold Curo, San Francisco, is the west coast's hottest shooter at the moment. A new name among national rankings with a fifth place this year, his Far West Regional Championship, won over the odds-on-favorites of Los Angeles' veterans, might have been considered just one of those things. For a first

year at Perry, however, to place third, seventh, and tenth in any of those events, shows that he is no mere flash in the pan. His record of 2417 competitors faced, and 2,045 of these defeated, all Experts or Masters, gives this young National Guard Officer rightful place among the celebrities.

The U. S. Marine Corps, always represented in the rankings, has one of their regulars, Sgt. T. E. Barrier in sixth place this time. Barrier in early season appeared to be the greatest threat to Reeves and Hemming of any one individual. He placed second to Reeves at Tampa and then pushed him to the limit in a spectacular finish for the Flamingo title a week later. At the Detroit Pre-Perry Matches, he came out with two firsts to emphasize his intentions for the Perry Nationals the week following. Barrier faced 3325 men.

Veteran Jake Engbrecht, popular Los Angeles Police shooter, came up with a good season, after falling from the top twenty rankings in the previous year. He counted heavily in the Far West Regional, the Southwest San Diego Matches, and the California State Championships, along with a first, sixth and two seventh places at Perry, for a total of 2517 competitors faced and 2,112 defeated.

The Infantry's strong team, by all logical reasoning, should have a representative in the top ten and again the calculator makes it so. Sgt. H. L. Benner with a long competitive record of meeting 3,680 Experts and Masters, turned back all but 667 of them.

M. R. Rogers, U. S. Treasury team member from Colville, Washington, has a similar record of 3,450 competitors faced. He defended his .22 caliber National title at Perry successfully, and becomes ninth in the rankings.

M. O. Wilson, U. S. Coast Guard, Baltimore, Md. fired at Perry, Tampa's Mid-Winter, Miami's Flamingo, Detroit's Pre-Perry and Washington, D. C.'s Metropolitan, facing 3,308 shooters and defeating 2,691 of them.

As mentioned above, a new system for determining outstanding competitors of the country has been employed for the pistol shooters this time. The pistol clan have previously been selected on their average over the year. The basis of competitors faced as compared with the number defeated, however, gives the fairer picture of ability throughout a season.

The changes instituted this past year insure real quality of competition. Thus, only Masters and Experts met and defeated are considered. For that matter, rankings are limited to only Masters and Experts. The further stipulation narrows down the field; a minimum of 480 rounds in competition of Class AA (National matches) Class A (Regional Matches) or Class B (District or State matches). Also, a competitor must have fired in at least two of these classes, one of which must be either his Regional or the National matches.

1940 PISTOL RANKING LIST

Rank	Name	Ranking Figure
1	Hemming, A. W., Detroit, Mich.	8786
2	Reeves, H. W., Detroit, Mich.	8768
3	Spavor, P. C., St. Louis, Missouri	8536
4	Walsh, W. R., Arlington, Virginia	8491
5	Curo, G. W., San Francisco, Calif.	8461
6	Barrier, Sgt. T. E., U. S. Marine Corps	8415
7	Engbrecht, J. J., Los Angeles, Calif.	8391
8	Benner, Sgt. H. L., U. S. Infantry	8326
9	Rogers, M. R., Colville, Wash.	8238
10	Wilson, GMIC M. O., U. S. Coast Guard	8135
11	Echols, L. E., Nogales, Ariz.	8093
12	Goulden, CBM Paul, U. S. Coast Guard	8081
13	Huddleston, Garfield, Kansas City, Mo.	8008
14	Densford, Lt. C. F., U. S. Army Air Corps	8004
15	Anderson, Arvid, Warroad, Minn.	7964
16	O'Connor, F. M., Kansas City, Mo.	7969
17	Jones, E. E., Los Angeles, Calif.	783
18	Deyo, R. R., White Pigeon, Mich.	7594
19	Chapman, P. M., Seattle, Wash.	7483
20	Woody, J. N., Columbus, Ohio	7339
21	Fletcher, Cpl. W. E., U. S. Marine Corps	7106
22	McCasland, L. P., Big Spring, Texas	7036
23	Brown, C. A., Tampa, Florida	6872
24	LaLonde, M. W., Detroit, Mich.	6713
25	Cline, Bert, Kansas City, Mo.	6624
26	Hiderton, Sgt. H. O., U. S. Infantry	6621
27	Hagan, F. D., Washington, D. C.	6595
28	Shapiro, Albert, Detroit, Mich.	6595
29	Meloche, A. L., Phoenix, Ariz.	6551
30	Yanick, O. J., St. Louis, Mo.	6499
31	Tucker, Sgt. J. R., U. S. Marine Corps	6496
32	Sommers, P. H., Jefferson City, Mo.	6359
33	Stubbs, Frank, St. Louis, Mo.	6301
34	Bracken, R. C., Columbus, Ohio	6277
35	O'Dell, E. T., Detroit, Mich.	6277
36	Rodeheffer, Lt. N. J., U. S. Marine Corps	6277
37	Ward, C. E., Los Angeles, Calif.	6235
38	Clark, Cpl. C. A., U. S. Infantry	622
39	Anton, C. J., St. Louis, Missouri	6209
40	Ammlung, A. T., Belleville, Ill.	6187
41	Wallis, O. L., Poplar Bluff, Mo.	6187
42	Slack, W. B., Washington, D. C.	6113
43	Kirk, R. L., Tampa, Fla.	6049
44	Donlan, J. P., Los Angeles, Calif.	5991
45	Ebbeson, D. D., Bangor, Maine	5985
46	Sanderson, L. C., Detroit, Mich.	5944
47	Carlson, Stanley, Traverse City, Mich.	5791
48	Driver, Sgt. M. D., Detroit, Mich.	5751
49	Garr, Lt. M. G., U. S. Infantry	5734
50	Perna, Sgt. Vito, U. S. Marine Corps	5732
51	Sayers, C. J., Detroit, Mich.	5725
52	Hurley, C. B., Mt. Pleasant, Mich.	5695
53	Alexander, E. D., Savannah, Ga.	5693
54	Thomas, J. W., Jacksonville, Fla.	5561
55	Hill, Thamer, St. Louis, Mo.	5456
56	Marlowe, W. F., Savannah, Ga.	5444
57	Wilson, K. A., Redwood City, Calif.	5434
58	Mansell, R. J., Washington, D. C.	543
59	Topper, Sgt. A. O., U. S. Infantry	5316
60	Leonard, Lt. C. F., U. S. Infantry	5283
61	Schneek, Edwin, Detroit, Michigan	5261
62	Boisubin, V. P., St. Louis, Mo.	5227
63	Thimmesch, D. A., Liberty, Iowa	5176
64	Kaniecki, S. J., Detroit, Mich.	5158
65	Ricker, W. G., Blue Hill, Maine	5087
66	Tiefenbrunn, V. J., St. Louis, Mo.	5039
67	Jubenville, V. G., Detroit, Mich.	5025
68	Standau, R. L., Tampa, Fla.	4984
69	Nikoden, Joseph, Allen Park, Mich.	4901
70	Verna, Tulio, Bend, Ill.	4891
71	MacIntyre, J. L., Detroit, Mich.	4837
72	Simon, M. R., Beaver Falls, Pa.	4835
73	Perez, A. M., Los Angeles, Calif.	4819
74	Priess, H. E., Jefferson City, Mo.	4818
75	Adams, J., Jr., Boston, Mass.	4745
76	Larsen, R. B., Chicago, Ill.	4744
77	Wentzel, A. N., Battle Creek, Mich.	4718
78	Ebbeson, A. Jr., Bangor, Maine	4564
79	Kane, K. K., Los Angeles, Calif.	4481
80	McBride, F. M., Denver, Colo.	4481
81	McMahill, R. B., Washington, D. C.	4475
82	Cook, William, Washington, D. C.	4415
83	McForn, J. A., Detroit, Mich.	4374
84	Markle, L. F., Denver, Colo.	4135
85	Layton, J. B., Washington, D. C.	41
86	Gerlich, F. J., Riverside, Ill.	4047
87	Bridges, M. L., Washington, D. C.	3985
88	Field, L. L., New Brighton, Pa.	3958
89	Taylor, M. G., Highland Park, Mich.	39
90	Johnson, C. R., Savannah, Ga.	3749
91	Bullwinkle, G. A., Philadelphia, Pa.	3573
92	Applegate, William, Philadelphia, Pa.	3567
93	Bates, D. E., Kansas City, Mo.	356
94	Rau, Capt. C. G., U. S. Infantry	3329
95	Chenoweth, M. K., Lansing, Mich.	2941
96	Townsend, C. K., Springfield, Ill.	2936
97	O'Donnell, Fred, Jonesville, Va.	2876
98	Platt, D. P., Baltimore, Md.	2824
99	Stewart, G. M., Washington, D. C.	2773



Al Hemming



Harry Reeves



Paul Spavor



Walter Walsh



Garold Curo

TOURNAMENT REVIEWS

PACIFIC SOUTHWEST SMALL BORE MATCHES

Ringed out the curtain on the 1940 outdoor small bore rifle season, California's 3rd annual Pacific Southwest tournament, held at Glendale Nov. 23 and 24, brought out a total of 74 competitors under fairly good weather conditions.

Sam Lear, Vallejo old-timer, nosed out of the Regional in mid-summer, caught up with Regional champion Tom Dunlap in this final event to win the grand aggregate for the Fray-Mershon Trophy, 2784-points to 2777 of the Glendale ace. Robert Perkins, Fresno finished third with 2773; Wally Robbins, Glendale, fourth, 2772 and L. A. Pope, Los Angeles 2758 for fifth.

Two youngsters stole the show from the veterans, prior to the aggregate compilations when Bill Lear beat dad Sam in the any sight Dewar with a 399-25x count, while earlier in the day, Frank Sawyer, Long Beach marksman class shooter marched into another 399 total in the iron sight Dewar to lead the field.

The four-man team match, 20 shots at 100 yds., any sights, for the News-Press Trophy was taken by the Burbank R & R club; team members J. O. Miller, Ruth Davis, O. A. Knight and B. Furhman totaling 792-44x over Glendale club's 792-39x. Lcs Angeles was third with 790.

Other first places in the seven individual match program were: Wally Robbins, Glendale 400-31x in the 50 yd. iron sight; Robert Perkins, 397 for the 100 yd. iron sight; Tom Dunlap, 399, 100 yd. any sight; Sam Lear, 398, 50 meter iron sights; Bering Monroe, Ontario, 400-32x, 50 yd. any sight. The any sight aggregate went to Tom Dunlap with 1196 and the metallic sight matches to Lear with 1590.

SOUTHLAND PISTOL AT SAN DIEGO

The final "shoot" in that popular series of Southland Pistol Matches, staged by the San Diego Police Revolver Club, was held December 1 with the Marines of the San Diego base very much in evidence by their winnings.

Sgt. F. J. Bergmann, winner of the .22 caliber National Match Course, the opening event, put with this 286 score a second and a fifth place with the succeeding center fire and .45 caliber matches over the same course to set up an 839 for the Grand Aggregate and top prize. This was a lead of two points over Rodney Pease whose center fire score of 282 gave him a share in the gold medals, along with the .45 Service Pistol Winner, Sgt. Carl Haynes, USMC. Behind Bergmann with the .22's were George Harrington with 286 but outranked Clem Portman, 285; Rodney Pease, 284. Following Pease's lead with center fire were Bergmann, 281; J. R. Oliver, 280, and Sgt. E. V. Seeser, 279.

H. E. Harris of the West Coast Rifle Club was the only shooter able to break up the top five monopoly of the Marines in the service pistol event. Seeser had a 278 behind Haynes' 279, Sgt. H. Ewton a 276, Harris, 273, and Bergmann, 272.

These Southland Matches, rivaled only by Florida's league activities in number of enthusiastic feminine admirers of the sport, gave a final summing up for the year to the ladies. A Grand Aggregate for the year with the accompanying golden trophy went to Maybelle Maryhew who definitely clinched the honor by firing a 197 score for the 20 shot slow fire of the last day. Kathleen LaMadrid counted second with 195 and Pat Peterson brought together a 194 to crowd out Bobby Rutherford for second place in the Grand Aggregate.

Three team events, all well represented, and fired over the National Match Course

appeared a toss-up between the Marines' number one team and the first stringers of the San Diego Police. The Marines led the cops with the .45 service pistol, 1355 to 1313, then exchanged places in the .22 caliber firing to the tune of 1413 to 1386 and in the center fire match, 1343 to 1333. Pease, Oliver, Freed, Fleming, and Magone fired for the police, and Bergmann, Ewton, Haynes, Huff, and Hassig for the Marines.

NON-REGISTERED EVENTS

ARIZONA—The 1940 season in the State Pistol Association of Arizona closed December 1 with the Annual Election of Officers Tournament at Phoenix. About thirty-five shooters from over the state and neighboring states were in attendance.

The first match, Any Caliber Police Course, proved that the going would be tough. Frank Blake of Phoenix was first with 292, A. L. Meloche of Phoenix second, with Jim Taylor of the University of Arizona third. Both of these men shot 290.

Match No. 2 was over the National Course with .22 caliber guns. First place went to A. M. Perez of Los Angeles with a score of 290, followed by Norman Adair of Yuma with 286, and A. L. Meloche in third place with 285.

Match No. 3, Center-Fire National Course, found Al Meloche at the top with 280; Gordon Smith, U. S. Deputy Marshal of Phoenix, 279 second; and Adair third with 279.

Match No. 4, .45 National Course Event, ended up with A. L. Meloche shooting a 291, one point better than the present World's Record; Adair in the second place with 270 and Perez third with 270.

Match No. 5, Center-Fire over the Camp Perry Police Course, was won by N. R. Adair with 293, Meloche 290, and A. Lerua, jr., of Tucson third with 288.

The three gun aggregate, .22 Center-Fire and .45 over the National Course, was won by A. L. Meloche with a new State Record of 856. Adair 835, Perez 832, Smith 812, Weiss 809, Snyder 798, Stowe 793, Blake 780, Hathaway 774, and Tom Imler 765.

The .22 National Course Team Match was won by the Pima Pistol Club team of Tucson (Lerua 281, Stowe 281, Taylor 280, and Hathaway 280) with 1122, Sahuaro Rod and Gun Club of Phoenix second with 1110, Sahuaro Rod & Gun No. 2 third with 1086, Yuma 1085 and Pima "B" 1036. The Center-Fire Team Match over the Camp Perry Police Course was won by the Sahuaro Rod & Gun Club (Meloche 290, Smith 288, Coor 284, and Snyder 282) with 1144, Sahuaro No. 2 Team 1096, Pima 1095, Phoenix Police 1079, Pima "B" 1003.

The 1941 Officers elected are: Arnold L. Meloche, Phoenix, President; Mack Weiss, Yuma, 1st Vice President; A. Lerua, jr., Tucson, 2nd Vice President; H. C. McMahan, Jerome, 3rd Vice President; Howard Hathaway, Tucson, Secretary-Treasurer; Gladys Richardson, Casa Grande, Statistical Officer; M. W. Trowbridge, Phoenix, Chief Range Officer; and Merle Stowe, Tucson, Range Officer.—C. HOWARD HATHAWAY.

TEXAS—It rained for three whole days prior to the East Texas Pistol & Rifle Club Big Bore National Defense Match, and no one had a chance to get that last minute practice but enthusiasm ran high, and we were still hopeful.

The morning of the match the rain had stopped, but a very heavy fog had appeared and targets could not be seen until 10:30. It finally cleared up and shooting conditions were ideal. Some of the softies, of course, let the weather scare them but there were

still exactly 30 entries and the matches began.

Match No. 1 was 5 shots prone, 5 shots kneeling at 200 yards, any .30 caliber rifle, metallic sights, 2 sighting shots. This match was won by Archie E. Wood with score of 48-5V.

Match No. 2 was 10 shots prone, 200 yards, any rifle .25 caliber or larger, any sights, 2 sighters; won by Jack Roach using .30 caliber with metallic sights with score of 50-6V.

Match No. 3, 10 shots, Army standing, any .30 caliber rifle, metallic sights, at 200 yards, no sighters; won by Captain Ralph Heidman with score of 46.

Match No. 4, as many shots as possible on running deer target at 200 yards in ten second limit, any .25 caliber or larger with any sights, in standing position. After shooting off 4 ties the match was won by Sgt. Paul Wagster.

Match No. 5, the Grand Aggregate, was won by Sgt. Paul Wagster with score of 141-5V; this also entitled Sgt. Wagster the honor of winning as high National Guardsman the "Gregg County Admirers" Trophy.

Thirty-five medals were awarded in all classes including a low score medal. The 8 inch A target was used in all matches with a 4 inch V ring. Yes, we had a booby prize but no one won it as not a penalty point, protest, or alibi was given throughout the match.—HUGH P. PRINCE, Match Chairman.

MINNESOTA—Running Deer Match. On November 10 the United Sportsmen's Rifle Club of Minneapolis, Minnesota, staged a Hunters' Special Running Deer Match for the novice shooter. This is the average deer hunter who has never fired in competition and could not be classed as an expert shooter.

This course of fire was one shot for each five second exposure of the deer which gave each shooter a total of ten shots. The winners were determined by the Lewis Class used in trap shooting. Trophies for the first place winner in three classes, that is Class A, B, and C and three additional prizes for the second, third, and fourth place winners in each class.

Jimmy Robinson, trap shooting editor of "Sports Afield," handled the publicity and as usual Jimmy did his job well and put the shoot over with a bang.

At 8:30 in the morning on the day of the match the shooters started a line at the registration tent that kept the cashier, Fred Lussier of the Western Cartridge Company, and our statistical officer, Mrs. William K. Taylor, the wife of our president, busy throughout the day. By 9 o'clock we had the first relay of seven shooters on the line and for the rest of the day we averaged a relay every ten minutes to put a total of 330 shooters over the course. We had one of our cloudy Minnesota days, so for the last three relays automobile headlights supplied the illumination and as one shooter put it, "I have done hunting of all kinds, but this was the first time I have shined deer with a clear conscience and real enjoyment."

Our main purpose in staging this match was to give the average deer hunter a chance to get some needed practice and a chance to get his rifle properly sighted before the deer season which opened five days later on November 15. We had regular military A targets available for the shooters to give them an opportunity to check their sight settings before shooting in the deer match. On this end of the line, giving expert advice on sight settings and a hundred other problems that always puzzle this class of shooters, we had; C. V. (Con) Schmitt, Walt Bratchi, Einar Gren, and Ray Dubey, a quartette that know rifles and ammunition.

Since the match dozens of letters and phone calls have been received from the shooters congratulating us on a splendid match and for giving them an opportunity to shoot before going into the woods.—O. V. JOHNSON, Executive Officer.

NEW QUALIFICATION MEDALS

The new series of Gallery Qualification medals for both rifle and pistol is now ready for issue. These medals are of brand new design, using enamel on both medallion and top bar. We guarantee you will be proud to wear them or we will refund your qualification match entry fee.

No changes have been made in courses of fire, scores required or other conditions that applied toward the old-type gallery medals. You may still qualify by firing before your club officers or by using the scores made in either postal or shoulder-to-shoulder matches. The latter necessitates only that you mention the tournament and match in which the score was made.

Besides the medals, there are felt brassards and enamelled lapel pins available. All three may be obtained with one qualifying score. Send for complete information.

COACHING "A LA TEWES"

(Continued from page 41)

and coolness, probably indicative of an impending change in the barometer. Excepting Dabb, the other members of the team were of the poky order; grunting and puffing and taking an ungodly time to pull the trigger so that we were sailing pretty close to the time limit in the 1000 yard stage of the match. When Dabb's partner fired the final shot of his score, I smelt rain. In front of us was a beautiful, sunshiny summer day. Looking over my left shoulder to the northward I saw a black squall coming at about a hundred miles an hour. Tops of trees bending to the ground and a mass of debris driven before the squall. It was then abreast of Spring Lake about a mile or two distant. Knowing it was but a matter of seconds before the squall would reach us, I said to Dabb quietly: "Earl, pay close attention to what I'm about to say and don't misunderstand me. The next shot you do not aim at your own target, but at the target next door on your left. Instead of aiming at the 6 o'clock edge of the bull, hold the tip of your front sight 10 feet below the bottom edge of the target and fire the shot promptly with the least possible delay." He got into position and promptly fired. To his amazement his own target went down and he was marked a pinwheel bull. "By jinkers," said he, "why did I have to do that?" I told him to pick up his traps and run for the nearest tent or he'd get drowned. We had barely reached the tent when the storm hit us and nearly all the canvas in camp was flattened. The uprights of our ridge pole snapped and we sat on somebody's trunk with the tent draped around us while a perfect deluge battered the canvas. Peeking out through the flaps we saw the thousand yard targets being ripped out of their frames and in some instances frame and target wrenched from the carriers and blown into the sea. In five minutes it was all over, the sun came out and again there was a beautiful, sunshiny day, bidding the summer goodbye. The Fourth won that match, and they would have won even if Captain Dabb's shot had been a miss, for they were the only team that finished in the time limit, which expired at the moment when the squall hit us.

The following winter, the Board of Officers of the old Fourth, as was their custom, gave their successful team a dinner at which Captain Dabb made the speech of the evening, paying tribute to Bill as the wizard of the rifle range. In the years that have passed between, no one could ever persuade Captain Dabb that this coaching stunt was not the wine of wizardry, nor intimate that it might have been inspired guess work, or just a plain ordinary garden variety of snap judgment. But why argue with a good friend who insists on placing you upon a pedestal?

COMING EVENTS

FLORIDA—It's getting around to the time for us to begin thinking about that annual trek Southward for Florida's big-three matches: St. Pete's Nat'l. Mid-Winter Small Bore (March 12-16); Tampa's Nat'l. Mid-Winter Pistol (March 11-15); and Miami's Flamingo Pistol (March 18-22). There's something diabolical about the dates those fellows pick for their matches. We get all settled into the monotony of winter, and then just as the worst of February slush hits us we have to go figuring out whether the old bank account will stand a trip to Florida this year. One more look at that sleety drizzle on the other side of our living room window and our mind's made up; the budget will be ruined, but the trip never fails to be worth what ever it sets us back.

For a mid-winter break there never has been anything like those shoots, either for the small boresman or the pistol shooter. The toughest of competition, plenty of events, award schedules loaded with medals and cash, plus the appeal of the whole state of Florida to wander about during those in-between days when there are no matches. We're still saying the same thing we said in 1936, and '37, and right up to this year: *better plan to attend*. Sounds trite, but it's good advice.

California

C* January 19: Traffic Police Monthly Pistol Match, San Francisco. Write E. J. Dutil, 324 16th Avenue, San Francisco, California.

C* February 16: Traffic Police Monthly Pistol Match, San Francisco. Write E. J. Dutil, 324 16th Avenue, San Francisco.

C* March 16: Traffic Police Monthly Pistol Tour, San Francisco. Write E. J. Dutil, 324 16th Avenue, San Francisco.

Connecticut

January 5: Connecticut Association Rifle Tournament, New Haven. Write L. M. Ahlberg, Middlefield.

January 19: Connecticut Association Pistol Tournament, New Haven. Write L. M. Ahlberg, Middlefield.

February 2: Connecticut Association Rifle Tournament, New Haven. Write L. M. Ahlberg, Middlefield.

February 28 March 1-2: Annual Connecticut Gallery Rifle Tournament, New Haven. Write L. M. Ahlberg, Middlefield.

March 16: Connecticut Association Rifle Tournament, New Haven. Write L. M. Ahlberg, Middlefield.

Florida

B* March 11-15: National Mid-Winter Pistol Tournament, Tampa. Write C. A. Brown, Hotel Thomas Jefferson, Tampa.

C* March 12-16: National Mid-Winter Small Bore Rifle Tournament, St. Petersburg. Write T. F. Brideland, 2742 Second Avenue, South, St. Petersburg.

B* March 18-22: Flamingo Pistol Tournament, Coral Gables. Write A. T. Kelley, Jr., P. O. Box 43, Coral Gables.

Illinois

January 5: Monthly Pistol Match, Chicago. Write Ralph B. Larson, 7713 Calumet Ave., Chicago.

February 2: Monthly Pistol Match, Chicago. Write Ralph B. Larson, 7713 Calumet Ave., Chicago.

B* March 28-29-30: 6th Annual University of Chicago Rifle Tournament, Chicago. Write Russell Wiles, Jr., University of Chicago Athletic Department, Chicago.

Iowa

C* January 18-19: Muscatine Registered Rifle & Pistol Tournament, Muscatine. Write Dr. J. G. Johnston, 219 West 7th Street, Muscatine.

Massachusetts

January 18-19: Sixth Annual Pistol Tournament, Beverly. Write David C. McNeill, 33 Beckford St., Beverly, Mass.

February 22-23: Annual Rifle Tournament, Beverly. Write David C. McNeill, 33 Beckford St., Beverly.

New Jersey

January 5: 50-Yard Small Bore Match, Union City. Write Walter Tanner, 119 Hobart St., Ridgefield Park.

New York

January 25-26: Gallery Rifle Tournament, Richmond Hill. Write Alfred Crowley, 115-103 228th Street, St. Albans, L. I., N. Y.

February 22: 3rd Annual Gallery Pistol Tournament, Roslyn, L. I. Write S. E. Ellis, 26 Kennworth Road, Port Washington.

North Carolina

C* February 21: Charlotte Rifle & Pistol Club Gallery Pistol Tournament, Charlotte. Write John H. Pierczynski, 1221 E. 36th St., Charlotte.

C* February 22: Charlotte Rifle & Pistol Club Gallery Rifle Tournament, Charlotte. Write John H. Pierczynski, 1221 E. 36th St., Charlotte.

Ohio

B* February 22-23: 16th Annual Mid-West Gallery Rifle Tournament, Columbus. Write C. I. Greer, Box 123, Barberton.

B* March 1-2: Summit County League Open Pistol Tournament, Akron. Write J. C. Kelsey, 133 Highpoint Ave., Akron, Ohio.

B* March 16: 16th Annual Ohio Gallery Pistol Tournament, Columbus. Write C. I. Greer, Box 123, Barberton.

Oklahoma

C February 22-23: Oil Capital Mid-Winter Gallery Rifle Tournament, Tulsa. Write C. N. Wyrkoop, 310 Thompson Bldg., Tulsa.

Wisconsin

January 5: Indoor Roundup Sponsored by Southern Wisconsin Rifle League, Broadhead. Write C. Karl Englebrecht, 1231 Jenifer St., Madison, Wis.

OBITUARIES

DR. JOHN R. BROWN

Dr. John R. Brown, 59, Pittsburgh Naturopath and well known marksman of that area, died at his home in Bakerstown November 30. He had taken many honors for revolver shooting and last year, as an instructor to the Pittsburgh Police Bureau, received a trophy from Sheriff John Heinz. He was a member of the Allegheny County Sheriff's pistol team. He leaves his wife, Mrs. Elizabeth Grubbs Brown, and a son, John R. Brown, Jr.

JOHN G. HOUGH

John G. Hough, 28, of Versailles, Ohio, a member of the State Highway Patrol and the Black Swamp Rifle Club of Versailles, died December 3, from injuries sustained in line of duty on September 19. He is survived by his parents, two sisters and a brother.

STOLEN GUNS

Hi-Standard, model E 4 1/2" barrel, #36450, .22 caliber, stolen from car, Nov. 23. Please notify M. C. Newcomer, 229 S. Broad St., Waynesboro, Pa.

CHALLENGES

Reslyn R. & R. Club would like to contact pistol teams for postal matches, pistol or revolver. Write S. E. Ellis, 26 Kennworth Road, Port Washington, L. I., N. Y.

DOPE BAG

Conducted by F. C. NESS

SMOOTH BORE MAGNUMS

While in the vicinity of Denver we had several opportunities of trying the long-range duck guns and of getting some dope on them. Among wild fowlers these days a commonly encountered weapon is the special Winchester pump gun known as the Heavy Duck Gun which is chambered for the 3-inch 12-gauge load holding $1\frac{3}{4}$ to $1\frac{1}{2}$ ounces of size No. 4 chilled or heavier shot for pass shooting. Our own sample has a fine choke by Winchester for this purpose and a finely carved buttstock by that artist, Pince of St. Paul. This gun will take individual ducks easily at 60 yards.

My only objection to this long-range "twelve" is its unweildiness on the second shot. Usually the operator settles down and handles the arm well enough for the third and final shot, but by that time Mr. No. Two Duck is usually well out of range, which goes for his fellows too. For any closer chances, at a pair or a flock, the standard Model-12 Winchester or Model-37 Ithaca is appreciably handier, faster and better adapted. With heavy duck loads of No. 5 or No. 4 chilled these standard "twelves" are no slouches when equipped with special chokes for the purpose. They are, however, 50-yard guns on single ducks, despite their propensity for crippling and knocking down ducks up to 65 yards upon occasion.

For 70-yard to 80-yard work on geese or the late-fall Mallard, who is just as wary, nothing less than the 10-gauge Magnum is required. This fearful weapon in a 32-inch "double" weighs around 11 pounds and carries a Roman-candle load of two ounces of No. 4 to No. 2 chilled. A good compromise load for all purposes, including geese, is two ounces of No. 3 copper-coated shot. I have seen some incredibly long kills made with this load and with Super-X No. 2 chilled.

The production gun for the 2-ounce Magnum load is the Ithaca 10-gauge "double," but Parker Brothers and perhaps others, will build them to special order. I have tried three different Ithacas of this breed, and I found them to be effective for me on the first shot, but handicapped with their own great inertia I was not as successful on the second shot. I believe the shooter must add 10 feet to his lead on the second bird because of slowing down his swing and failing to acquire sufficient or normal momentum after the first shot. Shooters have told me variously that they had to lead 30, 35 and even 40 feet on 80-yard ducks with the Magnum load. My first attempt at a very high duck proved successful and I estimated my lead to be nearer 20 feet than 30 feet. I made good on just about every shot with the first barrel and failed just as consistently with the second barrel. I also made one short-range kill on teal under 50 yards and was amazed to find its body intact when I picked it up. I also put two loads of No. 4's into a Canadian honker with one of these Magnums.

On account of the leverage of the heavy and long barrels considerable "brake" or resistance is applied to the locking bolt, and it is difficult to open some of these Magnums after firing. This is especially true of new guns before they have become properly broken. One trick I learned was to invert the gun to remove that leverage and then open it upside down. This helped enough to practically solve the opening problem with one of the three I tried. These guns should have single triggers or the rear trigger should be fired first always to let the recoil bring the second trigger within convenient reach without risking a finger bruise from the guard. One I tried with a single trigger doubled on

me upon two occasions and to say the least I got a positive reaction at the butt end while firing those four ounces of shot enmasse. I know I sat down involuntarily the first time that happened. It may not have been my most graceful maneuver but I am certain I had never before assumed the sitting position from standing nearly as quickly.

COLD CAMPING

Perhaps the most important piece of equipment which I had with me up in the snow at 9,500 feet altitude was my down-filled Eddie Bauer sleeping robe. I lacked an air mattress and the frozen ground was pretty cold and very hard at 8° below zero. The next night I made a browse bed, or spruce mattress, and each night I added another layer of cuttings. This was very comfortable under my sleeping robe in zero weather, and we slept in an umbrella tent without heat.

My tent mate, Jim Wilkinson, had a Kapok-filled bed, by the American Pad & Textile Co., over an air mattress and heavy waterproof cover. Two Hudson Bay blankets and my stocking cap kept him comfortable. I wore the parka of my Eddie Bauer Blizzard Jacket.

Next to woolen underwear and socks my next most important garment was the down-filled blizzard jacket. I rolled this lightweight coat into a compact mass and tied the sleeves around my waist before climbing towards timberline each morning. It was a great comfort upon more than one occasion. In Canada I found it vulnerable to rips and tears in the brush, but it was at its best for duck hunting from a blind or pit and the natural color of the jacket and its parka kept me well concealed from the "sharpest eyes in the world". For big game hunting a red-colored parka should be substituted.

On the coldest mornings I tried moccasins and four-buckle overshoes with two pairs of thick woolen socks. This outfit was warm, but an abomination for climbing in the snow. I had light-weight rubber shoes by L. L. Bean and the U. S. Rubber Company which would be fine for walking with snow shoes, but too cold in severe weather. The best rig for both warmth and climbing consisted of my leather shoes (dried and oiled each day) two pair of woolen socks and a felt inner sole. The sharp unyielding edges of leather sole and heel gave the necessary purchase on steep hillsides and in the snow for climbing. These leather shoes were equipped with those patented Miller half soles and I am glad to say that no clogging or packing of snow developed between the rubber treads. In mud, however, these intervening spaces become filled on the very first step.

TRADE DOPE

Sportsman's Hobby Shop of Spokane lists primers, primed cases, bullets and Ideal re-loading tools in case you live in that vicinity and need components.

Kno-Rust is an anti-corrosive compound for preventing rust or tarnish on all metals. It is now on test here. It is not a polish, lubricant or lacquer. It is wiped on the cleaned surface of the metal to be protected in order to leave a thin film which dries hard. Sent in by Howard F. Borroto of New York City.

Gunk is a self-emulsifying degreasing solvent which has proven to be effective as a cleaner of rifle and cannon bores, especially when primer salts are present in the fouling, according to a report received from Cory Snow of Boston. It was developed by A. F. Curran whose earlier bore-cleaning products have given as good results in all types of sporting firearms.

Johnnie Johns of Carcross, Yukon Territory, Canada, has an interesting folder for anyone who dreams of some day bagging a Dall, Stoni or Fannin sheep, goat, grizzly, brownie, moose or caribou.

Attractive Gun Rack is advertised by the George Marnhout Co., of Philly, makers of wood products, especially novelties and fancy turnings. The gun rack in question is not only very handsome but as practical in our opinion.

Resco Company of Detroit has one of the neatest metal sling keepers we have seen or tried. This one is a hinged clamp which has worked satisfactorily for us on the regular army sling. It is small and compact and its smooth edges do not mark the leather. Even so it has not failed to hold its adjustment in actual firing use. It was sent in by Charles Laing, and we have recommended it for production. The price should be nominal.

Protectobore, one of the best cleaning solvents we have used, especially in Service rifles and pistols, is again being advertised by H. E. Lucy of the Centercite Target Co. It's a worthwhile buy.

D. C. Addicks is ill and we have been asked to notify our readers he no longer accepts gunsmith work as a consequence. We hope his serious illness will have become less serious and that he will be well on the road to recovery by the time this notice appears in print.

Walker Optical & Supply Co. of Ann Arbor is a new title to us. Roy Walker is president of the firm which features Argus products. We hope the firm will bring out new optical products for shooters and adopt such worthy ones as the Wagner muzzle scope and perhaps a practical range finder.

Coated Lenses to cut down loss of light from surface reflections are a new product developed to a commercially satisfactory degree by optical engineers at Mt. Wilson Observatory and available for hunting scopes (at \$20.00) and for camera lenses (at \$25.00) through Ralph Waldo Miller of Altadena. We have noted an appreciable improvement in light transmission from this treatment applied to the Zeiss Ziervier scope.

Hoffman Arms Co., of Amarillo tested their No. 3 Model 375 Magnum Sporter, in $9\frac{1}{4}$ -pound weight, with $\frac{1}{16}$ -inch gold bead and Lyman-48 receiver peep, from muzzle-and-body rest, with the following results: 100 yards, 300-grain bullet, m.v., 2435 f.-s., 5-shot groups of 3.25 and 2.80 inches; 100 yards, 270-grain bullet, m.v., 2720 f.-s., 2.33, 2.54 and 3.00 inches; also 10 shots in 3.10 inches. This rifle had a 24-inch semi-ribbed barrel.

At 300 yards the 300-grain bullet gave 5-shot groups of 8.30 and 11.00 inches, while

the 270-grain bullet made two 5-shot groups of 9.50 inches and 10-shot groups of 10.25 and 8.10 inches.

* * *

Catalog No. 19 of John W. Smith is a new price list of antique and modern arms, scopes, field glasses, powder flasks, etc., from Runnemeade, N. J. Visitors are welcomed to No. 7 Rambler Ave., same place, and N.R.A. members are thanked for their 8-year patronage which made this bigger and better list of arms and war relics possible. The price for the 24-page book is 20 cents.

* * *

Weymie Fries, formerly of B. & L. and I.R.C., is now with Spencer Lens Company of Buffalo helping to develop and exploit their new line of binoculars. Weymie is an enthusiastic N.R.A. member who knows his optical instruments and he can be induced to clean and repair yours if you will write him at 27 Liberty Terrace, Snyder, N. Y.

* * *

Kirkwood Bros., Inc., have conducted a gun shop for 66 years, in Boston; now at 23 Elm Street, from whence comes their 1940 catalog of arms and shooting equipment, including reloading components, restocking and repair service.

* * *

Smith & Wesson, announce their .32 Safety Hammerless Revolver has been discontinued and that their .38 S. H. model is made only in blued finish and with 2-inch barrel. The old .44 Military and .44 Target models have been dropped and superseded by the 1926 versions of same which have reinforced cylinder-rod lugs as on the .38-.44 S. & W. revolvers.

* * *

Floating Rifles, bedded in a half-inch of sponge rubber, is an unique and practical shooting-box feature of Wisler Western Targets. According to their new literature their rifle kits are bracketed much like their spotting-scope cases as far as support is concerned.

* * *

Search Light for your hunting cap or hat is the subject of an interesting catalog put out by Brilliant Search Light Mfg. Company of Chicago, at 508 S. Dearborn Street. The featured model has a 45-inch gas hose, double or single lens, with cover and a large reflector. Jobbers and dealers are invited to write for special quotations; regular quotations and catalogs to all other inquirers.

* * *

Arthur P. Curtis, well known to American Rifleman readers, as a shotgun authority, has become general manager of The Hunter Arms Co., makers of the famous L. C. Smith double gun. Curtis was formerly with Marlin and with Iver Johnson before that for many years.

* * *

1940-1941 Catalog of R. C. Nichols Corporation reminds me of many camp comforts I lacked in our high-altitude camp above Muddy Creek in the Rockies. There are more than 30 large pages of illustrations of camp clothing and equipment.

* * *

Bud Dalrymple has been seriously injured and is in a hospital at New Underwood, S. D., according to word received from Mrs. Dalrymple by L. Burnett. We have been asked to publish this in order to save the family much avoidable correspondence.

* * *

R. F. Sedgley, Inc., who have been quoting twelve-week delays on deliveries, can no longer estimate dates of probable delivery on account of war contracts. The firm has suspended all advertising for the time being,

but has every intention of resuming the manufacture of sporting items after the present emergency has passed. A new building providing 70,000 square feet of additional floor space has been purchased in Philadelphia, and eventually this will be devoted to an expansion of the normal sporter manufacturing and gunsmithing business it is planned, according to a letter from the Sedgley firm just arrived.

New Remington Target Rifle fully equipped for match shooting as to sights, sling, stock, and at a moderate price is the "Matchmaster" in the box-magazine Model-513T. It has a 27-inch target barrel, Redfield micrometer rear sights, Redfield hooded aperture front sight, adjustable sling-position, target stock and everything complete, even to scope-base holes in the barrel. The weight is 9 pounds and the price is no more than thirty bucks, which means value. Indeed, this is very interesting news, especially for juniors, adult beginners, and new clubs. For the first time we have good, reliable target sights on a full-fledged target rifle at \$30.00. We tried the pilot model of this rifle last winter.

KINKS

Putty is suggested as the proper plastic for testing the mushrooming of lead bullets from handguns. Wendell T. Ingham, of Williamsett, Mass., tried a .22 Short on a piece of medium-soft putty at 50 feet and the 1½-inch cube was not knocked off the box on which it rested, but the bullet rebounded a couple of inches. It made a half-inch hole about ¾-inch deep and cracked the block in all directions, radiating from the impact.

Magazine Depressor for the Woodsman and similar pistols can be easily made from a flat piece of metal, cut to any desired shape and size for convenient grasp. All it then needs is a rectangular slot in the middle to fit and accept the magazine. Pushed down over the top it will engage and depress the magazine-follower button and carry it down, without slipping, for easy loading. At least, this method is liked by Hoffman Birney of Glen Mills, Pa.

Testing Pistols of light caliber for accuracy may be facilitated by fastening the handgun to the barrel of a scope-sighted rifle. John M. Lane, of Portland, Maine, says the Woodsman is easily so fastened to a rifle barrel by a clamp made of four pieces of hardwood and four ¼-inch stove bolts of 3-inch length.

.25 Rim Fire Pistol was at one time available with 8-inch barrel in the Stevens, No. 35, Offhand Model, S.-S. They can be had by converting a Stevens .25-caliber rifle into a handgun. Dr. C. Gene D'Oeuch, of St. Louis, Mo., made one with a seven-inch barrel from his Stevens Marksman rifle. The finger lever was bent down and a stock, made to match the Colt Single-Action grip, was fashioned and fitted. The rifle rear-sight was dovetailed into the top of the receiver and a new ramp-type front sight was made. His groups indicate an ability to shoot into 2½ to 3½ inches at 25 yards, from body-rest and offhand positions, respectively.

Darts for .17-caliber air-pistols are easily made by wrapping adhesive tape around the eye of a needle to obtain gas seal in the bore. They are fairly accurate at short range. At a few feet we have seen these darts perforate a copper penny and penetrate a nickel so deeply, that the point of the needle raised a projection on the opposite side. Several members have suggested these darts and one has the walls of his garage fairly studded with

them. We have tried them out in our Benjamin air pistol, but know they also work well at six feet in the Diana air rifle.

* * *

Pictures of odd guns prove the infinite possibilities of a well-equipped work shop, the skill of a toolmaker, the experience of a lifetime shooter and a creative urge in combination. One set from S. S. Webb, gunsmith of Warren, Ohio, shows home-made revolvers, which shoot modern ammunition in .22-caliber and .410 gauge, patterned after the S. A. Colt as well as a revolving shotgun. Mr. Webb was 75 years old in 1936, when he repaired 1100 guns in that twelve-month period. When last heard from, he was building a .410-gauge over-and-under. We size all our .22-caliber jacketed bullets for the Hornet, Swift, Zipper, Bee, Lovell, Niedner Magnum and Varminter in a .224-inch die made by Webb for his jacketed-bullet outfit, designed for utilizing .22 Short cartridge cases.

* * *

Chamber Cleaner. Dr. Forry Rohrer Getz of New York City has an excellent idea of how a pistol rod should be made for efficient handgun cleaning, and he proved it by having one turned out of steel for our edification. It is a solid rod in .45-caliber with a conventional jag-end. However, there are four grooves parallel with the long axis cut through the cross grooves or bands behind the knob-end, which is smooth. These milled cuts have flat sides which are at right angles, one being the vertical plane and reaching to center and the other being cut less deeply. The faces formed by this design hold the patch so securely, the rifling twists the smooth handle in the operator's hand as a patch is pushed through the bore. Also it permits twisting or revolving a tight patch in the chamber without slipping. It is not patented.

* * *

Stuck Shells even without their broken-off heads may be removed from sizing dies in fifteen minutes, says B. A. Fleming of Kansas City, Mo. His method was to choose his heaviest resized .38-Special case and fill it with melted lead to form a square-end punch of the proper size. It can be over-filled with lead and then filed off square at the mouth. This is put in the shell holder of the reloading tool or sizer and forced into the jammed sizing die, pushing the broken shell ahead of it. He thinks it will also work with the .44 Special caliber or any other straight case.

* * *

Simple Rod for cleaning .22 pistols can be had for less than two-bits by getting a wooden knitting needle and trimming its tip to hold a patch. Ernest A. Haeuser, Rugby, N. Dak., has been using one for several years.

* * *

Stock Adapting sometimes improves a handgun for the individual who transposes a favorite pattern to a pet model of a different brand. James P. Forsyth, Jr., adapted his preferred H. & R. No. 4 Sportsman stock to fit his Pope-S. & W. Single-Shot pistol. He merely had to cut a channel up to ½-inch deep at the bottom of the inside to admit that S. & W. square butt in that channel made for that curved H. & R. back-strap. It took him about ten minutes using a ¼-inch chisel. The front fitted the S. & W. frame closely. The front area behind the guard was filled with plastic wood. The stock was held by a screw tapped into the rear S. & W. grip strap. Averages went up nearly 10%.

* * *

Center Hold on dark days may be improved says W. B. Porter of Olympia, Wash. He paints the front sight a vermilion color for this purpose, and uses Weber's Waterproof Pigment Drawing Ink, because it leaves a dull non-reflecting finish which will not dissolve or rub off on the target range. The



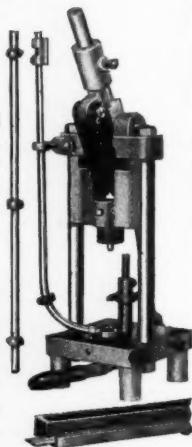
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recommended pigment can be had from any supply house dealing in draftsman materials, or from F. Weber Co., Philadelphia, Pa. Bill Trull sells lipstick for this same purpose and D. W. King sells red-post and red-bead sights.

Powerful Pest Load—An effective load for pests can be easily made by any shooter who has a good rifle or pistol in .22 Long Rifle caliber. Often the shooter needs a load for very close work on cats and gophers or birds in the backyard.

With a pair of pliers, or the jaws of a vise, remove the lead bullet from the loaded .22 cartridge. Be careful not to spill the powder. Have on hand a piece of bees wax. Push the case into the block of bees wax until it stops. Twist it until it is free of the wax. Smooth the end where the wax is protruding and it is ready for use.

The very light pellet of wax will travel with amazing accuracy and power. It stays together well and is far less dangerous than the famous B. B. Caps. The wax pellet mushrooms nicely and loses its power quite quickly. Be careful and see that it does not bounce back at you. On soft pine boards it goes in almost to its depth and frequently bounces out.—L. A. M.

LETTERS

On Duck Shot—In the October issue, there is a letter advocating alloy shot, composed of lead and magnesium, for ducks; that such shot would save the life of ducks.

It was claimed that when these shot fell on the feeding grounds of game birds and came in contact with moisture, they'd be dissolved. Therefore, save the life of wild fowl by not taking the lead with their food.

That might be all right for the wild fowl, but how about the person who makes a meal on the wild fowl which contains the lead magnesium shot that has been dissolved by moisture and contained in the eatable fowl?

It looks like a case of saving the wild fowl at the expense of the hunter.

It must also be considered that it is 100 to 1, ducks taken for food which would contain this dissolved alloy of lead would be poisonous to the human system as well as the duck to every duck that is killed by gathering up sufficient shot on the feeding ground.

It must be borne in mind that 25 lbs. of shot scattered over an area of 5 square miles of feeding ground, it would be a difficult problem for one duck to find 6 shots, a sufficient amount to poison the duck, especially in view of the fact that all feeding grounds contain a soft mud bottom to support

the growth of the food, and the weight of a lead shot would sink same into the mud far beyond the reach of a duck gathering the food such as they require.

In view of the same, it seems quite natural that if a shot of the character described was perfected by the shot makers, a law would quickly follow prohibiting the shooting of game with any sort of missile that would dissolve with moisture within the game and endanger the life or comfort of those who use wild fowl as a food.

There are a number of combinations in which finely divided lead products would enter into combination within the human digestive organs such as lead acetate and other combinations, the result of the contact of lead with chlorine products, all of which are poisonous to the human system.—VICTOR LEE EMERSON, M. & C. E.

* * *

A Call to American Tourists—Come on up. We need you. This is the first summer when you haven't swarmed on our highways, navigated our lakes and woke the echoes of our woods. We miss you. It doesn't seem the same place without you. We used to like to count the cars on a Saturday on Main Street in the home town and notice all the American cars. As many from "N. Y." and "Mich." as of our own and cars even from Texas and Oklahoma—with little flags and bannerets and slogans, and all proud of being so far from home,—just as we are when we get to Texas,—and never so fond of home as when furthest away from it.

That's the great thing about our back and forward transit over the boundary—the give and take of it—knocking one another out with wonder. We tell you what it's like when it's forty below, and you get back at us with a cyclone. So come on,—we can't keep it up alone.

Don't forget that everything is still here. The war makes no difference to the trout up in Lake Oh What-A-Wetness, and the moose along the Shiboogamow never heard of Hitler.

Trouble to get across?—not the slightest: The Canadian Immigration Officials? My Dear Sir! The friendliest fellows in the world. Just mention my name: Say you're a friend of mine on your way to the Old Brewery Bay, Lake Couchiching. Even the name sounds good on a summer day doesn't it?

There are no new regulations about your coming in,—just the same old disqualifications against imbeciles, homicides, parricides, germicides and so forth. If you have any of those qualities you must wait till they pass off.

You may have a little trouble going home to the U. S. You can't get back unless they know where you were born. But ask your mother. She'll know. Or, on the other hand, if there's any trouble, don't go back. Stay right here,—probably half your relations are here anyway.—STEPHEN LEACOCK.

* * *

On Durgin Critique—In looking over the Dope Bag in the September issue of THE AMERICAN RIFLEMAN, we noted that Mr. Durgin made reference to certain loads which are recommended in our Handbook. The implication was that these appeared only in the latest Ideal Handbook, whereas, as a matter of fact, they appeared in both No. 31 and No. 32, which you can see covers a considerable period of time. On checking over these loads we find that they were all recommended by the Hercules Powder Company with the exception of the one for the 30-30 W.C.F., which was tried and recommended by Phil Sharpe.

We, of course, realize that Mr. Durgin did make some concessions later on in the article, but we believe that it would appear to the average reloader as though we or some other

company (he does not specify who) were recommending loads which he considers excessive. In view of the sources from which these loads were obtained and the time that they have been appearing in our Handbook, we do not believe that to be the case.

The seating depths were also recommended by the Hercules Powder Company—A. J. GRIFFIN.

Barrel Versus Ammunition Cost—I have been thinking for some time of buying a new .220 Swift in the Winchester Model-70 and have been told by some that the barrel would not stand up for any reasonable time. For this reason I have hesitated in buying this gun. Please advise me as to this matter. I am thanking you in advance.—G. C.

Answer: If you are holding up purchase of a .220 Swift merely on account of barrel wear and erosion I would suggest that you forget it as this is not a sufficient reason. You will shoot more ammunition in cost than the barrel-worth before accuracy suffers. In our own .220 Swift after 1,000 rounds we had no loss in accuracy. I believe it would go to 2,500 rounds and you can get a new barrel from Winchester for \$15.00 and including stock work, completely fitted and ready to go, for \$32.50 just as it was before firing. One report on two rifles from the West indicates as many as 4,000 shots without loss of accuracy in two of these rifles. I would suggest that you figure the cost of 2,000 to 4,000 rounds of ammunition and then compare it with the cost of a new barrel.

Use F. A. Primers with Light Loads—I would like the following questions, pertaining to the .25-Roberts rifle, answered:

1) Are there any accurate lead or cast bullets available for use at ranges up to and including 200 yds. in the above rifle? If so, where can I obtain them and what are the recommended powder charges to use with them?

2) Do you consider it a good idea to use cast bullets for practise rather than the jacketed bullets? I understand that jacketed bullets are hard on the bore of a rifle. Therefore, I plan to use them only for qualification rounds and match firing.—F. S. W.

Answer: The use of lead-alloy bullets and reduced charges in your .257 Roberts rifle would prolong the accuracy life of the barrel. However, if you use very light loads you will have to use old-style primers to avoid the powerful thrust of the modern noncorrosive primers which, with light charges, drive the case forward and reduce the effective overall between shoulder cone and base thus increasing the effective headspace. The use of the Frankford Arsenal No. 70 primer will overcome this with very light loads. For 100-yard shooting, or squirrel shooting you can use almost any bullet weighing from 70 grains to 86 grains and a charge of about $7\frac{1}{2}$ to 9 grains and I think you will get better accuracy with this bullet and the No. 5 powder.

Deer Bullet.—You mentioned in a recent Dope Bag that the old U. S. C. Co. 145-grain hollow-copper-point was the best deer killer you knew of. I would like to call your attention to the 172-grain W. T. & C. W. bullet in hollow point. It works equally well. I have killed 16 deer in 16 hits, not shots. I never lost a deer that was shot in the body, nor did it travel after being hit. That was at Lakeview, Oregon, on tough mule deer too. I "gut-shot" one mule deer, a yearling, and dropped its paunch to the ground from the hole; yet, in bone and muscle, it does not tear up excessively. I like it especially well, as it acts pretty much the same as our F.A. bullet up to 600 yards. I have killed deer with this bullet from 5 feet away to 671 paces, and it laid them low, in one shot.—L. U. C. K.

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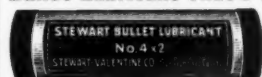
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SPORTS, INC. (Infrs.) 2850 N. Clark St., A-3, Chicago

SIGHTS AND LOADS SUGGESTED

I was glad to receive the program of rifle and pistol matches. While I do not think that I will have time to compete in formal matches this winter I may be able to do so at some later date. I am shooting about twelve-hundred rounds of .22 Long Rifle cartridges per year and about seven hundred of .45 and .38 revolver cartridges, which latter are handloads loaded by myself.

I expect to fire several hundred rounds of .30-caliber handloads of about the velocity of .22 Long Rifle cartridges and with lead bullets during the coming year and so will be using up most of my leisure time with this. It is my intention to reload some .30-'30's for my Winchester '94's, some .30-'40's, for my Krag and some .30-'06 fodder for my Enfield and am rather curious to know if I will be able to achieve .22 accuracy in bullet grouping with these arms and handloads at 20 to 100 yards.

My Krag is in excellent condition, but has some clearance between receiver slot and extractor lug and I have wondered if a bolt peep sight like the cheap Rice sight would give satisfactory results on this arm. I do

not see any practical way of shimming up this clearance and do not wish to have any stock welded on.

I have wondered if you have received any reports of bullet groupings with the No. 71 .348 Winchester or information as to whether it will ever be built for .30-caliber cartridges. I should think that in the latter caliber with sharp-point bullets available for single loading for long-range shooting by those who prefer the lever gun for hunting it would be the ideal arm.

I occasionally feel a little out of date, with my preference for the '97-Winchester pump, the hammer, lever gun, and the Colt New Service revolver, when I meet some youngster with a scope-sighted, bolt sporter, but while I expect to do considerable shooting with bolt guns and am well acquainted with their advantages, nevertheless I always expect to get at least an equal amount of pleasure with the hammer guns.

I am enclosing four crude targets from which you can see that there is room for considerable improvement in my shooting. Hoping to hear from you soon.—E. G. H.

Answer: I have read your letter and noted your targets and I would say that you are handicapped with poor sights. Your front sight should be wide, flat-faced and square top. It should be at least .65-inch wide and preferably .85 inch and up to 1/4 inch. Your rear sight should be rigid and reliable and the correct distance from your eye. The nearer your eye on a .22 caliber the smaller the aperture may be. On a .30 caliber, which has considerable recoil, the peep must be at some distance from the eye and a very large aperture must be used. You cannot equal .22 caliber small-bore target accuracy in your .30-caliber rifles unless you use a telescope sight. I would suggest the 29-S Weaver, for your Krag or Enfield, which costs only \$12.00 complete.

It will pay to reload for your .30-'06 and .30-'40 Krag, and I believe you can duplicate .22-caliber accuracy up to 100 yards. If you want a very accurate lead-alloy bullet I would suggest the Bond gas-check No. 311910 which weighs 153 grains and a light charge of No. 80 powder of around 10 grains. Another good bullet is the Pope type which weighs about 168 grains and has a wide base, but narrow, for shallow seating in the mouth of the case. This is also listed by Belding & Mull as their Squibb-Miller bullet No. 311168. In the .30-'06 you can use from 12 to 14 grains No. 80 and in the .30-'40 Krag, from 8 to 12 grains weight, and you should find either bullet fine up to 100 yards. It will not pay you to reload for the .30-'30 Winchester in any lever-action rifle or for the .348 Winchester. The cases stretch too much in these rifles and they are not particularly accurate.

We have tested the .348 Winchester thoroughly in the Model-71 lever-action and obtained an average of 10 inches at 200 yards for a great series of shots fired over several months with peep sight and telescope sight and from various rests and rest positions. It is not accurate enough for long-range shooting, but is sufficiently so for big game at 200 yards and it has plenty of killing power.

DEER LOADS AND SHOTGUN SIGHTS

For the past nine years I have been using a Model 12, 16 gauge, modified bore, Winchester for small game hunting with entire satisfaction.

During this same time, for deer hunting, I have used Winchester and Savage lever-action, also Krag and Springfield bolt-action rifles. By reason of using the shotgun so much more than the rifle, I find both these types of rifles very awkward.

My choice of a rifle, therefore, is a Remington, Model 14 or 141. As to a cartridge I

prefer the .250 Savage. But, unfortunately, no pump-action is made for this excellent cartridge. The nearest to it is the .25 Remington with the .30, .32 or .35 calibers additional.

Is this .25 Remington a satisfactory deer cartridge? How does it compare with the new Winchester shotgun slug in 16 gauge? Two sights are needed to give better aiming in connection with these slugs. What rear sight would you suggest for the above shotgun?—C. R. W.

Answer: In the .25 Remington and its very best deer cartridge, which is the one with the 117-grain soft-point bullet, we have the weakest practical deer load. At the same time I would prefer this load at 100 to 150 yards to the 16-gauge slug load. At ranges up to half this distance, or 75 yards, I would prefer the 16-gauge loaded with the new Winchester rifled slug. On our own hammerless slide-action shotgun we have mounted a peep sight from the Model-68 Winchester boy's rifle. This leaves two screw holes in the top of the receiver. We are now planning on mounting a Belding & Mull Hunter scope sight on this gun for slug loads. I have used this shotgun with the Hunter scope previously at trap and ran 35 straight sighting with the B. & M. Hunter scope sight and using standard trap loads on Blue Rocks. I have also bagged birds on the wing with the telescope sight. In the brush, however, it is an abomination, and I would not recommend it for grouse shooting or rabbit shooting, although it is practical on duck and on quail and dove in the open. Most of our other shotguns have the two bead sights in which the large front bead is held riding on top of the smaller back bead with a section of the intervening rib showing.

We have found the .25 Remington with 117-grain soft-point loads to be the best of all loads in this caliber for killing deer. This load is very effective at 150 yards on stalked game. However, on driven game it walked them to run too far even when fairly hit. While I think the Model-141 Remington is an excellent choice for your purpose, I would greatly prefer the .35 Remington cartridge for deer slaying. The .25 Remington is a better cartridge for target shooting and vermin shooting, such as woodchuck, as it is more pleasant to shoot although it is no more accurate in a good bolt-action rifle and little more accurate than the .35 Remington in the slide-action rifle. For deer alone the .30 Remington and .32 Remington are also very practical cartridges, superior to the .25 Remington. They are identical with the .30-30 Winchester in power, ballistics and killing effect.

Spherical Bullets. I note in your November issue page 44 article "Stevens .22-410" in which you refer to Winchester Model-94, .32-40 round ball load.

This carries me back 55 years, when a boy I traded for a Winchester 1873 Model in .32-20 caliber. Bore of this rifle was about gone, yet shot fairly well with old black powder loads. As I could not afford many shots with store bought fodder, I reloaded, using old S. & W. pistol short cartridge for powder charge cup and ordinary black shotgun powder costing about 40¢ per pound. For a bullet, used No. 3 buck shot, three pounds for 25¢. After seating I dipped bullet into beeswax and tallow for lubrication.

"Believe it or not" I killed hundreds of cat squirrels with this load trying for head when I could see them. I never tried this load for target, but it kept the pot full. That was all that interested me then. I want to try out your load in my .32-40 Winchester Single-Shot and see what I can do.—W. B. I.

Answer: Thank you for your letter about your experiences with the .32-20 round ball buckshot load in the old Model-1873 Win-

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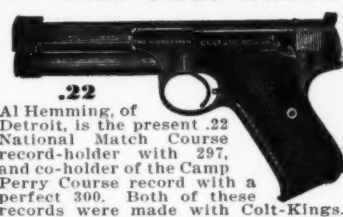
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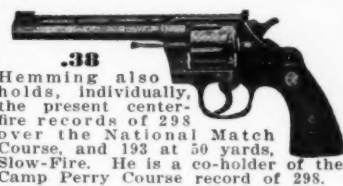
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Send for complete descriptive folder and prices on this new gun—also on our popular hammerless models.
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chester. Black powder is a fine propellant for such loads and so is King's Semi-Smokeless which I also used in the .32-40 Winchester behind the regular ideal round ball which was listed as standard .319 inch diameter, although slightly larger. They are not listed in the new Ideal Handbook as formerly, but undoubtedly you can obtain them. You can obtain round balls in various diameters from Belding & Mull, Philipsburg, Pennsylvania. If I were loading that load today I would use about the same charge of bulk shotgun smokeless, although my load was a straight charge of 4 grains No. 80 smokeless. I seated the round ball just half way in the mouth of the case which made it look like a short, round-nose bullet seated deeply in the case neck. This smooth outline also enables feeding the ball cartridges through the Winchester magazine. I think I had good success with them, because on squirrels I naturally elevated the muzzle for each shot. As a result, I had 50 squirrels with 53 shots and the extra shots can be blamed on darkness which interfered with seeing the sights and thus led to misses on three occasions. Whenever that round ball struck it went through the squirrel to the opposite side and stopped inside the animal for a very deadly effect on any body shot.

5 RECORDS held by HEMMING with COLT-KINGS



.22
Al Hemming, of Detroit, is the present .22 National Match Course record-holder with 297, and co-holder of the Camp Perry Course record with a perfect 300. Both of these records were made with Colt-Kings.



.38
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Groups of figures are computed as one word. Spell out all descriptive words; abbreviations may lead to serious misunderstandings and thus impair the effectiveness of your ad. Box number or blind ads will not be accepted. Please give your complete name and address, so as to facilitate the proper issuance of money-orders or checks, and to insure the prompt delivery of all mail or telegraphic replies. All advertisements must be accompanied by cash. Final closing date is the 5th of the preceding month. Please print all advertisements plainly—we cannot be responsible for errors due to illegible writing.

In describing the condition of guns advertised these standard phrases must be used: *Perfect* means factory condition. *Excellent* means new condition, implying negligible amount of use. *Very good* means practically new condition, implying little use, resulting in no appreciable bore wear and only minor surface scratches or wear. *Good* means moderate use with some finish worn off, only moderate bore wear with no pits and nothing worse than a little roughness in the bore. *Fair* means reasonably hard service, reasonable wear inside, nothing worse than minor pits in the bore, implying the gun is sufficiently accurate for hunting. *Poor* means marred appearance and pitted or badly worn bore.

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A quick, inexpensive medium for disposing of guns and accessories no longer needed, or for the purchase of more suitable similar items. We urgently request that a full description be given of every article offered, and its condition (see complete instructions above), for transactions of this sort must be based entirely on good faith and mutual satisfaction. Deliberate misrepresentation will of course result in immediate expulsion from N. R. A. membership.

Purchasers who wish to examine, before acceptance, guns or equipment purchased through these advertisements should request shipment by express, C.O.D., with examination privileges.

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HARRY M. POPE'S personal rifle, 44 Stevens-Pope Schuetzen, .33 cal. Palm rest, double set, beautiful burl walnut stock finely checkered. Original letter and test target. Rare rifle for collector. Full description if interested. Stamp appreciated. Floyd Holloway, 220 West Seventh St., Clovis, New Mexico. 1-41

WINCHESTERS: #75 DeLuxe Sporter, \$23.00. #74 DeLuxe Automatic, Weaver, \$25.00. Colts: Woodsman, DeLuxe carved grips, Heiser, \$30.00. OMT 38, "Pachmayr action" and adapter, Heiser, \$32.00. E. Keltner, Room 1308, 101 Park Avenue, N. Y. C. 1-41

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Some fellow sportsman probably wants just those very items.

So send your ad copy along immediately for the February issue. Final closing date is January 5th. See full instructions above.

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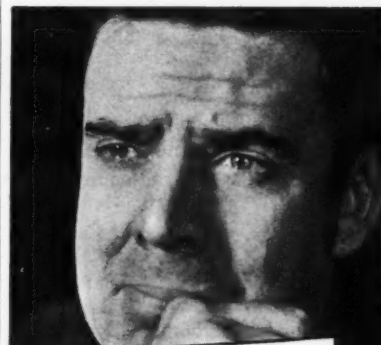
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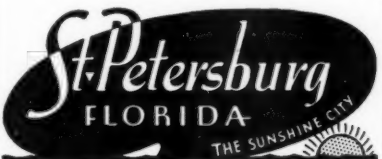
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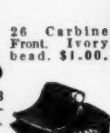
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GAS CHECKS: Calibers 22; 25; 270; 7-mm; 30; 32; 8 mm. 1,000 postpaid for a \$1.00 bill. 10% discount on 5,000 orders. Warner & Son, 2512 Pleasant Valley, Altoona, Penna. 2-41

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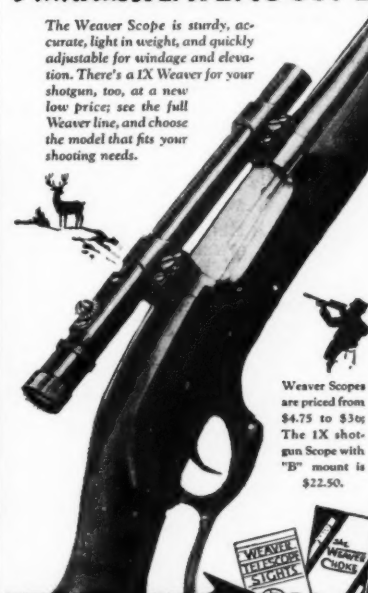
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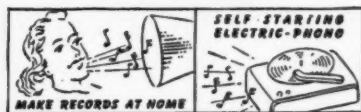
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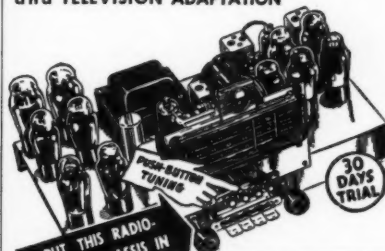
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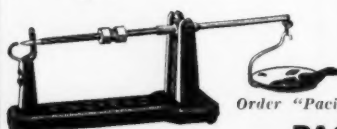
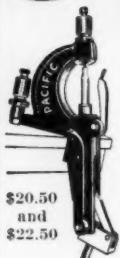
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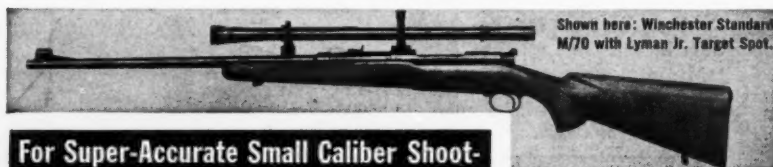


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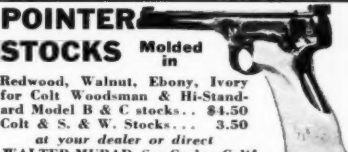
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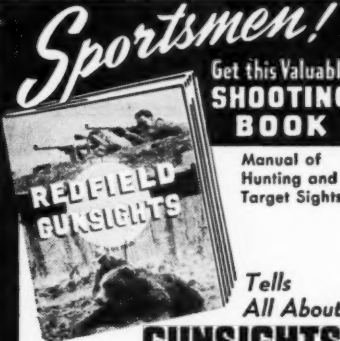
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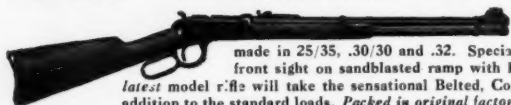
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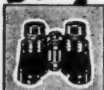
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